[From Petrus Franciscus Phrygius: Commentarii. I ugduni, 1644.]

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SIR THOMAS BROWNE, M.D.*

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CAMBRIDGE, ENGLAND

IN Oxford it is appropriate to think and speak of Sir Thomas Browne, for he also was a student here, a fellow-commoner at Broadgates Hall, which in 1624, the year after his matriculation, changed its name to Pembroke College in honour of William Herbert, Earl of Pembroke, Chancellor of the University, and, according to Aubrey, "the greatest Maecenas to learned men of any peer of his time or since." In the eighteenth century Pembroke was for fourteen months the home of Samuel Johnson, who wrote a life of his predecessor prefixed to the second edition of "Christian Morals" in 1756, and so was the Alma Mater of two of the most popular of the English Classics. A further association is that Johnson's literary style, especially in his earlier days, appears to have been influenced by that of his senior. Pembroke College is just opposite to Christ Church where Robert Burton (1577–1640) or "Democritus Junior" spent, as he says, "a silent, sedentary, solitary, private life," and brought out in 1621 his "Anatomy of Melancholy," a second and enlarged edition of which appeared in 1624, when Thomas Browne was an undergraduate. Sir William Osler, regius professor of medicine (1904–1919) and one of his most constant and eloquent admirers, in fancy pictures Browne as perhaps known to Burton and even watching his senior as he leant over Folly Bridge and laughed away depression by listening to the ribaldry of the bargees.

Further, Oxford men have been prominent as editors of Browne's works; Thomas Chapman (1812–1834), the first modern editor of the "Religio Medici," brought out at Oxford an edition of this, by then an almost forgotten book in 1831 when he was a nineteen-year-old undergraduate at

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Exeter College. Henry Gardiner (1815–1864), M.A. and also a member of Exeter College, edited the "Religio Medici," "A Letter to a Friend upon the Occasion of the Death of his Intimate Friend," and "Christian Morals" in 1845 after he had given up the idea of entering on the physic line and the year before he took Holy Orders. William Alexander Greenhill (1814–1894), like Browne, a scholar-physician, was educated at Rugby under Thomas Arnold, being a contemporary and friend there of Arthur Hugh Clough (1819–1861) the poet, who expressed the religious doubts and struggles produced by the Oxford Tractarian movement in the 'forties, W. C. Lake (1817–1897) dean of Durham, A. P. Stanley (1815–1881) dean of Westminster, and C. J. Vaughan (1816–1897) master of Rugby and of the Temple, and dean of Landaff; he proceeded to Trinity College, Oxford, and becoming a medical man practiced in Oxford until 1851, when he settled at Hastings and soon afterwards began working on Browne's texts, but being slow as well as thorough it was not till 1881 that Macmillan and Co. brought out in the "Golden Treasury" Series his edition of the "Religio Medici," "A Letter to a Friend upon the Occasion of the Death of his Intimate Friend," and "Christian Morals;" this at once became the standard edition on account of its scholarly notes, which with the glossarial index are really necessary to enable the ordinary reader to understand the obsolete words and allusions in the text. At the time of his death Greenhill was engaged on an edition of Sir Thomas Browne's "Hydriotaphia or Urn-Burial" and the "Garden of Cyrus," which was finished by E. H. Marshal and published in 1896 in the "Golden Treasury" Series. John Addington Symonds (1840–1893), a Fellow of Magdalen College, edited, with an introduction, the "Religio Medici," and others of Browne's works in 1886. Sir Kenelm Digby (1603–1665) who wrote the well-known "Observations" on the "Relligio Medici" was also an Oxford man, having been from 1618 to 1620 a fellow-commoner at Gloucester Hall, now Worcester College, but left the university without a degree.

Coming of a Cheshire stock, Thomas Browne, the only son and youngest of the four children of a mercer with exactly the same name, was born on October 19, 1605, the year that Bacon's "Advancement of Learning" first shed its light before the public, in the parish of St. Michael-le-Quern, Cheapside, within the sound of Bow bells; a scholar at Winchester (1616–1623), he went to Oxford in 1623, and on August 5, 1624, when Pembroke College was inaugurated, as senior fellow-commoner gave the first of the three orations in Latin. After taking the degrees of B.A. (1626) and M.A. (1629), he is said to have practiced medicine for a short time in Oxfordshire. In 1630 he started on a three years' grand tour, first accompanying his rather choleric stepfather, Sir Thomas Dutton, on an official inspection of forts and castles in Ireland, and then travelling alone on the Continent. He studied at the University of Montpellier, whither about twenty years later Thomas Sydenham (1624–1689) followed him. Then, some thirty years after William Harvey (1578–1657), he visited Padua, and about 1633 was at Leyden, where he is stated to have obtained the doctorate, but of this Sir William Osler failed to find any documentary confirmation on the spot. Browne's m.d., it may be mentioned here, was obtained from Oxford on July 10, 1637.

Returning to England in 1634 with a knowledge of six languages, and thus recalling and perhaps justifying Johnson's criticism of his literary style as "a tissue of many languages," he settled down at Old Shibden Hall, a house in a park, near Halifax in Yorkshire. Here, it would appear from his own rather quaintly worded statement, he wrote the "Religio Medici" about 1634–1635; for in it he remarked: "I have not seen one revolution of Saturn, nor hath my pulse beat thirty years," the second half of the sentence explaining to the ordinary man the meaning of the earlier part; and again more briefly: "Now for my life it is a miracle of thirty years." It was, he said, written "with no intention for the press" but was "composed at leisurable hours for his private exercise and satisfaction;" this no doubt pleasantly occupied the time while he was recruiting his health, impaired during his travels by disease and shipwreck, for, contrary to what is sometimes assumed, he did not practice his profession at this time. Several copies of the manuscript, differing somewhat in their wording, though none of these survives, were lent by Browne to his friends, who also transcribed them, and of these last there are seven in existence (Keynes). Thus in the course of six years it became known, and eventually in 1642 Andrew Crooke, a publisher, had it printed without the author's permission or name; this was so successful that a second unauthorized edition appeared in the same year.

His contemporary Sir Kenelm Digby hearing of it on December 19, 1642 from the fifth Earl of Dorset (1622–1677) a fellow prisoner, when confined in Winchester House by the Parliamentarians, sent for it in hot haste to St. Paul's Churchyard, and at a sitting, or rather while in bed, not only read it but from a Roman Catholic point of view penned "Observations upon Religio Medici: occasionally written by Sir Kenelme Digby, Knight," which when eventually printed ran to 124 pages or three-quarters of the size of the "Religio Medici," the whole *tour de force* being completed within twenty-four hours. This critical review was circulated in manuscript, and Browne, hearing from Crooke that it was intended for publication, wrote on March 3, 1643 politely begging Digby to delay this until he had seen an authorized copy; Digby replied with equal courtesy, even expressing regret for the hastiness of his remarks which, however, were by that time in type and actually saw the light at the end of March, and so before the appearance in the same year of the first authorized edition, with which Digby's "Observations" and the Browne-Digby correspondence are often bound up. According to Aubrey, Digby while in durance vile "practised chymistry and wrote his booke of Bodies and Soule (1644) dedicated to his eldest son."

Samuel Johnson in his Life of Sir Thomas Browne suggested that the anonymous and unauthorized editions were really arranged by the author in order to see how the "Religio Medici" would be received; Keynes considers this "sharp practice" quite incompatible with our knowledge of Browne's character; but after all this would appear to be a somewhat harmless experiment. It may indeed be suspected that, as the offending pirate, Andrew Crooke, was entrusted with the authorized edition, Browne may not have been altogether displeased and certainly appears to have forgiven the offence rather readily.

It at once attracted general attention, and was translated into Latin in 1644, into Dutch in 1665, French in 1668, and much later in 1746 into German. The title alone challenged comment, for in those days medical men were regarded as being without religion. It certainly did not escape criticism; while Gui Patin thought well of it, the Holy See put it on the "Index expurgatorius." Osler considered it no slight compliment to the author that he should have been claimed by one as a Catholic (the editor of the Paris Latin translation (1644) made by John Merryweather), denounced by another (Buddaeus of Jena) as an atheist, while a member of the Society of Friends (Samuel Duncon) regarded him as a likely convert. The modern view, voiced by Gosse and C. Whibley, is that it was the work of an artist rather than of a theologian. No physician had a nobler conception of his calling, but this did not save him from the disputatious Alexander Ross (1591–1654), who in "Medicus Medicatus, or the Physician's Religion cur'd by a Lenitive or Gentle" Potion, 1645, rated him and also Kenelm Digby, just as he had attacked Thomas Hobbes (1588–1679) and William Harvey. This ex-schoolmaster, whose heavy artillery did not touch Browne's delicate fantasies, was mentioned and thereby perhaps saved from oblivion by Samuel Butler in Hudibras:

> There was an ancient sage philosopher
> That had read Alexander Ross over.

The "Religio Medici" has been the favorite reading and guide of many more than double the age of the author, and seems to enforce his advice ("Christian Morals," Part III, Section VIII) to "anticipate the virtues of age, and live long without the infirmities of it." Its taking title has been imitated on many occasions; Keynes tabulates no less than eighty-five, dating from Lord de Cherbury's "De Religione Laici," 1645, to "Religio Militis" by Austin Hopkinson in 1923.

In 1636 Browne settled in Norwich, acting on the invitation of influential friends in Norfolk, and remained there for the rest of his life. He married in 1641 Dorothy (1621–1685), fourth daughter of Edward Mileham of Burlingham St. Peter, and by thus acting inconsistently with the bachelor opinions expressed in the "Religio Medici," such as "Man is the whole world, and the breath of God; woman the rib and crooked piece of man," and "I could be content that we might procreate like trees," exposed himself to some chaffing criticism from the wits, especially in James Howell's "Epistolæ Ho-elianæ: Familiar Letters," 1655, when in the next year his anti-matrimonial dicta became public property. In spite of his opinions when a celibate his children ran into double figures, probably twelve (Williams). Of these Edward (1644[*]–1708) the eldest, who encouraged by his father travelled much abroad, left a journal of his experiences in Paris in 1664, and in 1685 published the record of his more extended journeying during 1668 and 1669; he was elected a

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[*] The late Sir Norman Moore argued that he was born in 1642, as he entered Trinity College, Cambridge, in 1657, and thirteen years was an unusual whereas fifteen was a common age to enter the University.

Fellow of the Royal Society in 1667 when he was only twenty-three, an honor which was rather intriguingly denied to his encyclopedic father (vide p. 11), was physician-in-ordinary to King Charles II, elected physician to St. Bartholomew's Hospital on September 7, 1682, six weeks before his father's death, and as a crowning honor was president of the Royal College of Physicians of London from 1704 until his death. He must not be confused with another president of the College some sixty years later, the volatile Sir William Browne (1692–1774) who described his career in the modest terms: "Behold an instance of human ambition not to be satiated but by the conquest of three, as it were, medical worlds; lucre in the country, honour in the College, pleasure at medicinal springs!" Like Edward, though no relation, he was educated at Cambridge and stood up for his Alma Mater in the following circumstances: about 1716 George I bought the library of John Moore (1646–1714), successively Bishop of Norwich and Ely, and presented it to Cambridge; by a curious coincidence a regiment of cavalry was despatched to Oxford at the same time, an event which was commemorated by Joseph Trapp (1679–1747) of Wadham College, Oxford, poet and pamphleteer:

> The King, observing with judicious eyes,
> The state of both his Universities,
> To one he sent a regiment, for why?
> That learned body wanted loyalty;
> To th' other he sent books, as well discerning
> How much that loyal body wanted learning.

Sir William Browne's riposte was perhaps more effective:

> The King to Oxford sent a troop of horse,
> For Tories own no argument but force;
> With equal skill to Cambridge books he sent,
> For Whigs admit no force but argument.

Of Thomas Browne's three daughters, Elizabeth, wife of Major George Lyttleton, was instrumental in making public some valuable information about her father as well as being responsible for the publication of some of his posthumous works. Although he had a large family and twenty-eight grandchildren the male line became extinct in 1710 with the death of his grandson Thomas; but as a granddaughter, Frances Fairfax, married the ninth Earl of Buchan, the family is still represented.

For forty-five years Browne led a philosophic and philanthropic life in the quiet backwater of the cathedral town, in spite of the Civil War and the visitations of the plague (1665–1667) and smallpox (1669). He had a large circle of friends and correspondents, such as John Evelyn (1620–1706) the diarist, who visited him in October, 1671 and described his house and garden as "a paradise and cabinet of rarities, and that of the best collections, especially medals, books, plants and natural things," John Aubrey (1626–1697) the gossipy annalist Elias Ashmole (1617–1692) whose name is kept green by the Ashmolean Museum in this the senior University, Sir William Dugdale (1605–1686), Ashmole's father-in-law, the most prolific author of the monumental "Monasticon Anglicanum," Henry Power (1623–1668) of Christ's College, Cambridge, and of New Hall, Elland near Halifax, who was a follower of William Harvey in the experimental investigation of the circulation, Robert Paston, first Earl of Yarmouth, who made Evelyn and Browne acquainted, and Nehemiah Grew (1641–1712) the botanical physiologist.

When civil war broke out Browne's sympathies were wholly with the

Royalists, though he did not take any part more active than declining to contribute in 1643 to the funds of the Parliamentarians. On September 28, 1671, King Charles II paid a state visit to Norwich, and after a banquet proposed to confer the honor of knighthood upon the mayor, Thomas Thacker, who, however, modestly begged that the honor might go to the most distinguished man in the city and pointed to Browne, who, after the royal approval of this noble gesture, thereupon knelt down to arise Sir Thomas.

Our impressions of Sir Thomas Browne's appearance would naturally be largely guided by his reputed portraits, the authenticity of which has been critically considered by Miss Tildesley, who shows that only four can be regarded as accurately representing him. Dressed quietly but somewhat after the cavalier fashion with a moustache and small chin beard, he somewhat resembles William Harvey and William Shakespeare, and indeed there has been some discussion whether or not one of the portraits was of the Bard of Avon or of the Sage of Norwich. He had auburn hair and his complexion was "answerable to his name," and according to Gosse "a curious idiosyncrasy was an effect of his thin dark skin, for blush after blush would mantle over his face on slight occasion and often without any observable cause at all. Whitefoot attributed this to Browne's modesty, but perhaps it was merely physical." He seems to have been uniformly serene, and according to his friend, the Reverend John Whitefoot, Rector of Heigham, a parish in Norwich, who had known him since 1637, his gravity was natural without affectation, and "he was never seen to be transported with mirth or dejected with sadness; always cheerful, but rarely merry." His days were full and must have been happy, and with an insatiable curiosity he was a great field naturalist. His early travels had made him cosmopolitan and a lover of his fellowmen, and he urged his children, girls as well as boys, to go abroad, and so share his advantages.

"Pseudodoxia Epidemica or Enquiries into very Many received Tenents, and commonly presumed Truths," by far his largest work, appeared in 1646 and admittedly was "composed by snatches of time, as medical vocations and the fruitless importunitys of uroscopy would permit him," and thus was the product of work spread over many years, probably including those spent in continental travel. Consideration of common errors, provided they are those of others, have always received due attention, and a list of thirty-seven of Browne's forerunners and successors in the task of correcting vulgar errors is given in Keynes' "Bibliography of Sir Thomas Browne." Five authors: Laurent Joubert (1579), Mercurius (1603), Bachot (1626), James Primrose (1639) and D'Espagne (1643), preceded Browne in the publication of books dealing with vulgar errors. To those appearing after Browne's publication two may be added to Keynes' list: "Medical, Philosophical and Vulgar Errors of Various Kinds, Considered and Refuted" by John Jones, M.B., Printed for T. Cadell jun. and W. Davis, London 1797, and "Popular Medical Errors" by J. B. Harrison, M.D., F.R.C.S., 1851. Among works which appeared after "Pseudodoxia Epidemica" is "περιαμμα ἐπιδήμιον: or Vulgar Errours in Practice Censured" which came out anonymously in 1659 and has been ascribed to Obadiah Walker (1616–1699), master of University College, Oxford, who in 1689 was ejected as a papist from his post and was supported in the ten remaining years of his life by his pupil Dr. John Radcliffe (1650–1714), the generous benefactor to the University of Oxford. The preëminence of Browne's "Vulgar Errors" was responsible for a copy of Obadiah Walker's work, which came into my hands some years ago, being labelled on the back "Vulgar Errors, Browne." Its contents of course were different from that of Thomas Browne's work and the preface dealt with some of his critics, which is worth quoting as showing an anticipation of what is usually regarded as a modern expression: it said of these opponents, "The disease they suffer from is the spiritual rickets whereby their heads swell beyond due proportions."

As a naturalist and a medical man Browne, perhaps inspired to some extent by Francis Bacon's "Novum Organum" (1620), recognized that the prevalent error of the time was the obsequious obedience to tradition which prevented observation and correction of most obvious mistakes handed down from Pliny and others of a bygone age. He tried to induce his readers to consult nature instead of relying on the written word. Though discursive and abounding in odd digressions, "Vulgar Errors" was a courageous book of considerable originality. It was translated into Dutch, German, Italian, and French, and aroused some hostile but inefficient criticism; Alexander Ross returned to the charge with "Arcana Microcosmi or the hid Secrets of Mans Body disclosed . . . with a Refutation of Doctor Brown's Vulgar Errors" 1651, and John Robinson, a Norwich Doctor, published in 1656 in Latin "Endoxia" and two years later in English "A Calm Ventilation of Pseudodoxia Epidemica."

It is perhaps rather rash, at least for medical men, to write such books, for on the one hand some of these errors are often medical opinions of a former generation, for which, therefore, their professional ancestors are responsible, and on the other hand the whirligig of time sometimes transforms the vulgar medical errors of one period into the scientific truths of a subsequent one. Jacobi rather sarcastically remarked: "The medicine of every period of history is sure to filter into what euphemistically is called the brains of the lay community."

Enlightened as he was in many respects, Browne was by no means free from errors as common, and by modern standards as absurd, as any he exposed; he was a firm believer in magic, and was carried away by the alchemistic revelations of his fellow practitioner in Norwich, Arthur Dee (1579–1651), the son of the better known John Dee (1527–1608), the astrologer. None of us is infallible, and the most learned are sometimes the most gullible, perhaps because they rely more on authority than on experimental investigation; Casaubon set an example of simple faith in alchemy; Sir Kenelm Digby enthusiastically proclaimed the powers of "the sympathetic powder"; George Berkeley (1685–1753) Bishop of Cloyne, considered the most learned and wisest of men, advocated tar water as a panacea; and there are not a few modern instances of this human trait. In 1664 Browne gave "expert" evidence against two unfortunate women, Rose Cullender and Amy Duny, accused of witchcraft, and thus aided most materially in their conviction and execution. It might be thought strange that he should have believed in witchcraft, not only because of his criticism of others' vulgar errors, but because being a wide reader he was probably cognizant of the growing incredulity of the existence of witches, and familiar with Reginald Scott's book "The Discoverie of Witchcraft" (1584) "the object of which was to put an end to the cruel persecution of witches." John Webster's "Displaying of Supposed Witchcraft" in 1677, five years before Browne's death, clearly indicates that there was incredulity about witches. On the other hand, as pointed out by Knott, twenty years after the trial at Bury St. Edmunds no less than sixty witches were discovered (or invented) in one year by Matthew Hopkins, the witch-finder, all of whom were executed. Browne's own opinion, expressed when he was thirty, remained unchanged: "They that doubt of witches do not only deny them, but spirits, and are obliquely and upon consequence a sort, not of infidels, but of atheists." In 1904, when the monument to Sir Thomas Browne at Norwich was being arranged, there was a discussion whether or not in view of Browne's action in regard to the witches' trial and his apparent inhumanity it was fitting that this plan should be adopted; one correspondent went so far as to say that his record was "stained with innocent blood" and that if any memorial was to be erected it should commemorate his innocent victims; it was no doubt an error to judge him by the ethics and beliefs of the twentieth rather than by those of the seventeenth century. On October 19, 1905 the tercentenary of his birth, a statue of Sir Thomas Browne, executed by Henry Pegram, A.R.A., was unveiled in the open part of Norwich known as the Haymarket by the late Lord Avebury (1834–1913), perhaps better known as Sir John Lubbock, who in 1871 brought in the Act of Parliament establishing the August Bank Holiday (St. Lubbock's day) and twenty years later made public his list of "The Hundred Best Books." The late Sir Clifford Allbutt, in thanking Lord Avebury, said that, as Sir Thomas Browne was great as a man of science, greater as a naturalist, and greater still as a man of letters, it was with singular fitness that Lord Avebury, who was a great man of science, a great naturalist, and no less renowned as a man of letters, should preside at the celebration.

"Hydriotaphia, Urn Burial or a Discourse on the Sepulchral Urns lately found in Norfolk" and "The Garden of Cyrus or the Quincunciall Lozenge or Network Plantations of the Ancients, Artificially, Naturally, Mystically Considered with Sundry Observations" were both published in 1658. In "Hydriotaphia" he was one of the first of the moderns to revive the philosophic discussion of what is now cremation. "The Garden of Cyrus," not being so characteristic of his best style, and in fact the most difficult of his works, is not so well known. By the word "quincunx" was meant an arrangement of plants in groups of five, and Browne discourses learnedly of ancient gardens.

"A Letter to a Friend upon the Occasion of the Death of his Intimate Friend," published posthumously in 1690, was probably written about ten years before his death, and is closely connected as regards its matter both with "Urn Burial" and with the commencement of "Christian Morals." It shows his charmingly sympathetic attitude to the sick and dying, and was evidently drawn from his experience as the medical attendant of the unknown consumptive whose "deliberate and creeping progress unto the grave" he so well portrays. Some, and it is not surprising, rank it as the most appealing and attractive of his writings; it is freer than others of his best known writings from words or expressions so unfamiliar or obscure as to pull the reader up and drive him to the glossary.

"Christian Morals," intended to be a continuation of the "Religio Medici," an idea with which he had toyed for forty years, was published posthumously in 1716 at Cambridge, and was probably not meant to be issued in that form. It was the work of an old man and, it has been surmised, was actually begun when the author was seventy years of age. It lacks the naive autobiographical charm of the "Religio Medici," and, as Gosse said, "He has ascended the pulpit in a cassock and thunders his 'Christian Morals' at us as from a height above our heads." Addington Symonds suggests that in parts it might be a caricature of the style of the "Religio Medici," and, if the authorship was not established, an imitation of the earlier classic by another hand. It may well have been made up of paragraphs expanded from occasional notes in his commonplace book; and yet some of the maxims are attractive, for example: "To forgive our enemies is a charming way of revenge," and when on the subject of taciturnity: "Think not silence the wisdom of fools, but, if rightly timed, the honour of wise men, who have not the infirmity, but the virtue of taciturnity, and speak not out of the abundance, but the well weighed thoughts of their hearts. Such silence may be eloquence."

"Certain Miscellany Tracts," thirteen in number, were published in 1683; they were originally letters to his friends, Nicholas Bacon, John Evelyn, Sir William Dugdale, and others, and were selected out of "many disordered papers, "about the future of which, as far as was then known, Browne had not left any directions as to their publication or suppression; T. K. Monro, however, quotes from a letter written by Browne to Aubrey in 1673 saying that he had "some miscellaneous tracts which may be published." The duty of bringing out the "Tracts" was performed by Thomas Tenison (1636–1715) who had been "Upper Minister" of St. Peter Mancroft, Norwich (1674–1680) and thus "had the happiness to have been, for some years, known to" Browne, was at the time rector of St. Martin's-in-the-Fields, London, and in 1695 became Archbishop of Canterbury. In the foreword to the "Tracts" Tenison wrote if the reader "is not pleased with them, he seemeth to me to be distemper'd with such a niceness of imagination as no man is concerned to humour." The order of the "Tracts" is first those concerned with plants, then those relating to animals, men, and matters of a various nature. Thus "The Plants Mentioned in Scripture," which occupies half the small octavo volume, is followed by Tract II: "Of Garlands and Coronary or Garland-Plants," and the third tract deals with the subject "Of the Fishes

Eaten by our Saviour with His Disciples after His Resurrection from the Dead." "Hawks and Falconry: Ancient and Modern" engaged his attention, and he wrote on language, on artificial hills or tumuli, on the cities of the Dead Sea, and on "The Exposition of the Prophecy: When New England [the North American Colonies] shall Trouble New Spain."

In two circumstances at least his writings had a curiously prophetic bearing on his own death and remains. In "A Letter to a Friend" he said: "When there are no less than three hundred and sixty-five days to determine their lives in every year . . . that [any person] should wind up upon the day of their nativity, is indeed a remarkable coincidence." This came to pass in his own case, for he died on his birthday, October 19, 1682, in his seventy-seventh year. He thus was like Shakespeare who was born on St. George's day, April 23, 1564, died on St. George's day 1616, and puts into the mouth of Cassius in "Julius Caesar" the words:

> This day I breathed first; time is come round,
> And where I did begin, there shall I end;
> My life has run his compass.
> *Julius Caesar*, v, 3.

In "Hydrotaphia: Urn Burial" he remarked that: "To be knaved (stolen) out of our graves, to have our skulls made drinking-bowls, and our bones turned into pipes, to delight and sport our enemies, are tragical abominations escaped in burning funerals." And in the dedicatory epistle to this, which has been described as his most characteristic work, he writes: "But who knows the fate of his bones, or how often he is to be buried." About August 10, 1840 the lid of his leaden coffin was accidentally broken open by a workman's pickaxe, and his skull then disappeared until in 1847 it was presented, probably by a Dr. Lubbock, to the Museum of the Norfolk and Norwich Hospital, where it was kept. Who removed the skull from the coffin in 1840 is not certainly known; but Canon Meyrick evidently thinks it was a churchwarden (Robert Fitch), "whose acquisitive complex was abnormally developed even for an antiquary," who may have taken it at the same time as the brass coffin plate which was found in a secret well of his desk after his death in 1895. In 1905 when a quatercentenary celebration of his birth was held in Norwich the late Sir William Osler, a lifelong and devoted Browne-ite, provided a handsome casket and pedestal to contain his skull, and here it remained for visitors who made the pilgrimage until 1922, when an arrangement was concluded between the governors of the Norfolk and Norwich Hospital on the one part and the vicar and churchwardens of St. Peter Mancroft on the other that the skull should be reinterred with an inscription in the church near the supposed site of Sir Thomas Browne's grave; it was also agreed that before the skull was handed over the hospital authorities should be presented with a plaster cast of the skull, which should not be exposed in any way to the public as a relic of Sir Thomas Browne. The inscription marking the spot of the reinterment of the skull in the chancel was written by the Bishop of Norwich, the Right Reverend Bertram Pollock, K.C.V.O.:

> O caput augustum, Petro custode sepulchri
> Sit tibi pax; nomen vivat in urbe; vale.

The skull was buried in the chancel near the supposed site of the coffin on July 4, 1922. On January 26 previously the skull had been sent to Sir Arthur Keith at the Royal College of Surgeons of England for expert examination so that a permanent record might be obtained; the results of this examination and more research into Sir Thomas Browne's ancestry and portraits were published by Miss Miriam L. Tildesley, research worker, Royal College of Surgeons of England Museum. It was settled that it was the skull of the sage of Norwich, in spite of its forehead so markedly receding as to suggest defective development of the part of the brain intimately connected with the powers of concentration and discrimination. The appearance of the skull was thus so unexpected and disappointing to his admirers that an American surgeon, frankly incredulous, declared that he "should class it as that of a Peruvian."

In connection with the Norwich Memorial, the peregrinations of his skull, and ceremonies concerned therewith, it is rather ironical to recall his own words: "At my death I mean to take a final adieu of the world, not caring for a monument, history or epitaph, not so much as the bare memory of my name to be found anywhere, but in the universal Register of God."

Browne has been described as thinking with his imagination, and that as a result his writings belong to the domain of literature rather than of philosophy or science (Hertford). His style and quaint language have enriched the world with many familiar sayings, and of the numerous new words he introduced some are in constant use, such as medical, literary, hallucination, antediluvian, and umbrella. Whibley says: "His writings sparkle with exotic words, fashioned with daring, and yet in good accord with their origin." But the odd words and conceits he delighted in have perhaps, as Gosse suggests, given him a reputation for humor which he neither desired nor deserved. Humor and wit are different, and William Petty thought Browne one of the most witty writers. He is often obscure, as his admirer Charles Lamb hinted in speaking of "the beautiful obliquities of the 'Religio Medici.'" His writings do not appeal to everyone, some regard them as straining after effect, whereas others, such as Saintsbury, can hardly speak too highly of them. De Quincey spoke of his "mighty rhetoric," and regards him and Jeremy Taylor as the greatest English exponents of rhetoric. A lover of nature with an insatiable curiosity, a catholic collector, he made many observations and was obedient to the maxim of his senior William Harvey (1578–1657) "to search and study out the secrets of nature by way of experiment"; in his "odd prowlings about the tombs of those long dead" he discovered and investigated adipocere or "grave wax" formed in certain circumstances in dead bodies and thought to be due to the transformation of protein into fat. He is also said to have "made practical experiments upon the process of congelation and the nature of bubbles" (J. A. Symonds). It would thus appear that he might well have been a Fellow of the Royal Society, which was established in 1662; and it has been suggested that his exclusion was intentional and due to his reputation as an infatuated astrologer, and also perhaps to his style, for the Society demanded from its Fellows a precise and brief statement and set its face against elaborate exposition. Browne, like Pascal, regarded science and religion as quite distinct realms and considered that authority though a dominating influence in religion had no place in science.

The finest passages in Browne's writings were those inspired by the mystery of death, and he has been called "the laureate of the forgotten dead" (Gosse). As a writer his style is quaint and picturesque and it is not so much for what he says as for the manner in which he expresses our thoughts, aspirations and speculations that he lives.

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SKETCHES*

I. AN ACCOUNT OF THE MOST ANCIENT TRADE RELATIONS OF CNIDOS AND COS
II. THE DORIC SETTLEMENT OF THE ISLAND OF COS
III. WHERE WAS HIPPOCRATES THE GREAT BORN?

By KARL SUDHOFF

LEIPZIG, GERMANY

OF the harbors along the Asia Minor litoral, the natural wonderful double harbor of Cnidos (Fig. 1) possessed even at the dawn of navigation in the Aegean, a very great local significance, and beyond this a further one for navigation in the whole eastern portion of the Mediterranean. Furthermore even earlier, the natural open bay in the western portion of the island of Cos had an importance not to be underestimated. In the case of both bays improvements were soon made by constructing sea-walls. At Cnidos a dam was built which connected the island with the mainland thus completely separating the two harbors and by so doing assuring the value of both. In the southern harbor the entrance was narrowed by building sea-walls on both sides though this construction seems not to have antedated the beginning of the historical period. In the bay of Camára in Cos (Fig. 2) a mole and breakwater were built along its southern bank over against the small island of Palaeonisi, and here a number of anchorages were also developed.

In voyaging in the waters surrounding the Dodekanese Islands in the direction of Rhodes and Cyprus and further on towards the Syrian and Egyptian coasts both harbors were of significance as shelters, but more especially the one at Cnidos. Those however who came from the west and who rounded the southern cape of Cos in all probability gladly sought shelter in the bay of Camára in the island of Cos especially when the weather was unfavorable, and the winds not favoring, before taking up again the journey to Cnidos which appeared in the distance on the horizon.

At the cape itself a free outlook towards Cnidos was prevented by a small island surmounted by a high rocky ridge in the middle of which there was a sharp notch. This small island had an especial significance in early history, for it concealed the most valuable material of the Stone Age, namely, obsidian, a stone as hard as steel and on occasion as sharp as glass. It possessed this material not only in its best state but also in almost inexhaustible amounts. Even now when for purposes of daily use an interest in this treasure has long since disappeared the name of this island is called Hyali (ὑάλη the glass island).

The whole southwest portion of the island of Cos consists as a matter of fact for the greater part of obsidian (Fig. 3). It is not only the mountain Zeni itself, overlooking as it does the harbor from the south which is composed of an enormous obsidian block

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* An address on Cos and Cnidos delivered at the Rockefeller Institute for Medical Research, 22nd October, 1929. The address did not contain, however, all the data contained in the present publication. Compare my little book, Cos and Cnidos, Munich, 1927.

(Fig. 4) but also the entire southern mountain chain of the island which consists essentially of this material (Fig. 3). A large number of passages or shafts besides have been sunk into the mountain Zeni on the side nearer the town through the loose surface layers of earth by means of which the attempt seems to have been made to search for other minerals. Obsidian of even a more perfect glass-like quality was found on the glass island opposite and is still to be found in large blocks in the prehistoric quarries. This obsidian island which also goes by the name of Istros attained great importance in the obsidian trade of the eastern Mediterranean, greater perhaps than that which during recent decades has attached to the island of Melos especially so far as the trade with Egypt is concerned. But the last word in controversy must be left to specialists in petrography and chemistry who alone are in position to solve the nature and use of this material.[1] In any case in order to understand the early trade relations of the southeastern corner of the Aegean, it seemed to me necessary to point out the significance of this material, the need for which has perhaps been decisive in the development of these trade routes.

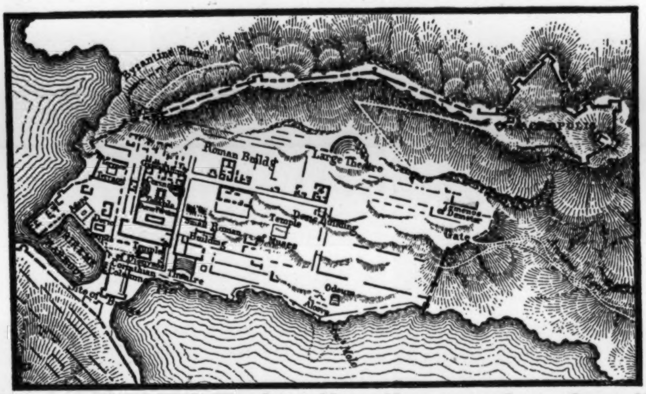

Fig. 1. Portion of Town of Cnidos; Small North Harbor and Large South Harbor.

The obsidian island Hyali (Fig. 5) lies at about equal distances from the harbors both of Cnidos and Cos though perhaps a little nearer to the southernmost point of Cos. The advantage of trans-shipment was in all probability shared by both harbors except that at times the harbor of Cnidos seems to have had the superior position. In any case both these harbors were through this very ancient trade in obsidian well known at an early period, and especially in the eastern portion of the Mediterranean.

The Doric Settlement of Cos

Let us return however to Mount Zeni and the Bay of Camára. Here a short time after 900 B.C. Dorian immigrants coming from Crete landed and made themselves masters not only of the bay which had been settled by Carians but also the small plain set in fruit trees in the direction of the isthmus as well as of the surrounding uplands, on the highest points of which they constructed their settlement and their fortified area just as the Carians had done before them.

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[1] See *Naturwissenscb.*, 15: 335–337, 1927.

This region had moreover the advantage of possessing a large spring. This city situated above the harbor of Camára surrounded by willows and later by vineyards and a small amount of arable land prospered on the southern uplands of Cos (Cephalos) and soon became the chief city of the island. Walls were not built however until the time of the Peloponnesian war. The Acropolis constituted also the citadel under the protection of which the city Cos-to-asty (κῶς τὸ ἄστυ) later called Astypaleia flourished, situated as it was in a healthful region above the harbor and the level of the orchards. The inhabitants of the ancient city and their descendants who today inhabit the village called Cephalos still praise their good air and their good water which was formerly brought to them in pipes from the well to their settlement.

Cephalos and the isthmus soon became too small however for the Dorian invaders. They spread out to the plain, rich in orchards, to the north of the mountains into the region of Hippias, Haleis and Phyxa (See map of Cos, Fig. 6). A little town called Antimachia which lies at the strategic point on top of the rising plateau of the isthmus and indeed at its widest point, preserves as its name implies the memory of a battle perhaps the crucial one fought between Dorians and Carians. As the result of this conflict there lay open to the Dorians either after they had completely conquered the ancient inhabitants or in lieu of that had perhaps come to an agreement after an indecisive battle, the entrance to the plain below Pyli and Asphendiu the great fertility of which was well known through the whole of antiquity. The approach to the small plain of Cardamena and Halasarna terminating as it does in front of the declivity at Christos was now also open.

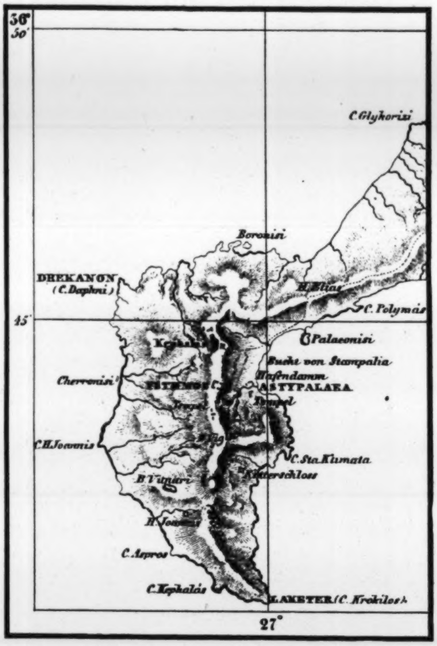

FIG. 2. PENINSULA OF CEPHALOS (ISTHMOS), DETAIL OF MAP OF ROSS IN THIRD VOLUME OF HIS VOYAGES, 1845.

The northern plain which has at all times been the home of malaria is directly continuous with the plain to the northest of the central mountain mass the slope of which falls away in this direction and ends finally in the gently indented coastline which looks eastward to the Asia Minor litoral in the direction of Halicarnasos. Through the possession of many small ponds (*lampi*) this coastal region demonstrates with sufficient clearness its tendency to the danger from malaria. A settlement situated on the slope running down to the coast, where to the north there was a sacred cyprus grove, was later, in about 350 B.C. united with the new capital when it was decided, perhaps as the result of experiences during the Peloponnesian war to transfer the main city of the island from Isthmos to the north side of the island even though only a few decades before walls had been built around the old city on the isthmus (Astipaleia). At the site of the new city built along the short northeast coast a new port was dug with spades and this still serves small ships as a harbor of refuge whereas larger ships anchor in the open roads. From the dangers of this exposed position during stormy weather they must escape by sailing on in order not to be driven upon the shore.

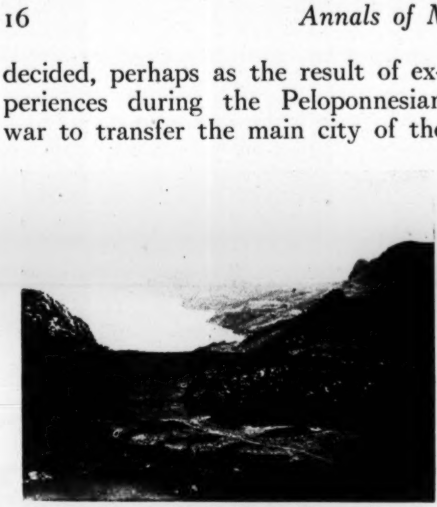

Fig. 3. View of South Cape (Cricelo) of Cos; Obsidian Mountains Thymianos and Latra. (Photographs by Professor Plieninger in Hohenheim.)

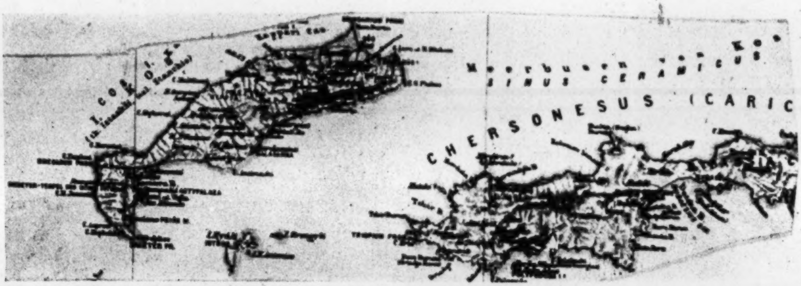

Fig. 5. Map of Cos, Island Hyáli (Istros) and Cnidian Chersonese.

In the sacred grove of the old settlement corresponding approximately to the contemporary village of Cermete, a temple to Asclepios was begun about 300 B.C. It was this temple which later became the center of the medical activity of the island.

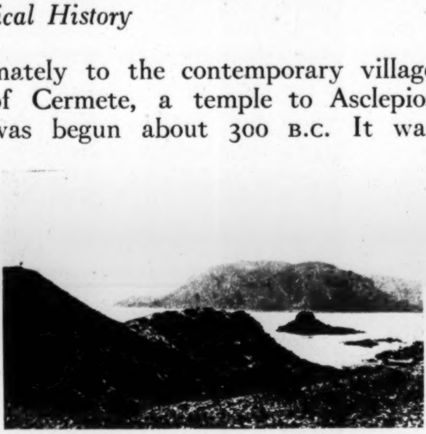

Fig. 4. View of Obsidian Mountain Zeni, Across Bay of Camára, Together with Small Rock Island, to Which Remains of Old Mole Still Lead (Plieninger).

The cult of Asclepios itself was brought to the island by the Dorians and was even before this fostered especially by the family of the Asclepiads which devoted itself to its pursuit both in their own home on the island as well as in Cnidos. A temple to Asclepios was in point of fact dedicated on the isthmus already in early times, the remains of which near the village of Cephalos in the direction of the Acropolis (Fig. 7) await further excavation. Still older remains sacred to the memory of Asclepios have been found in the deme of Haleis below the old town of Pyli, ruins which have been associated with traditions according to which these were concerned with the healing properties of dreams; and there are still other remains in the old deme of Halasarna not far from the coast of Cardamena where excavation still needs to be undertaken. A further small temple of Asclepios may perhaps have lain near Paleio-Antimachia on the river Cyparissos. In the level country to the northeast where in about the year 350 B.C. the new city of Cos was built, the god of healing Asclepios was worshipped in the same temple as Apollo Cyparissios, and there there was built later on, as has already been said, the Asclepieion in which all the medical activities of the island were concentrated, and the leadership of which was vested in the hands not only of the medical fraternity of the city of Cos but also in those of Damos and Bula (Δᾶμος καὶ βουλά).

It has remained for German enthusiasm and ability to rediscover these holy places of the old Greek center of the healing art and to excavate them in a series of archeological campaigns.

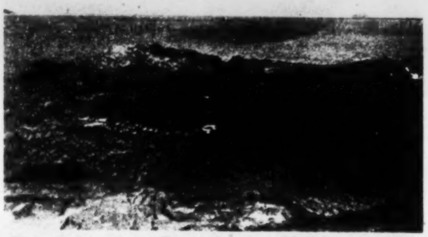

FIG. 6. VIEW OF ROCK ISLAND HYÁLI FROM EAST ENTRANCE OF BAY OF CAMARA; TO LEFT, FOOTHILLS OF CNIDOS (PLIENINGER).

THE BIRTHPLACE OF HIPPOCRATES

The question arises was Hippocrates II, the great Hippocrates, the son of Heracleides the most important physician of all times, the pride of the race of the Asclepiads of Cos

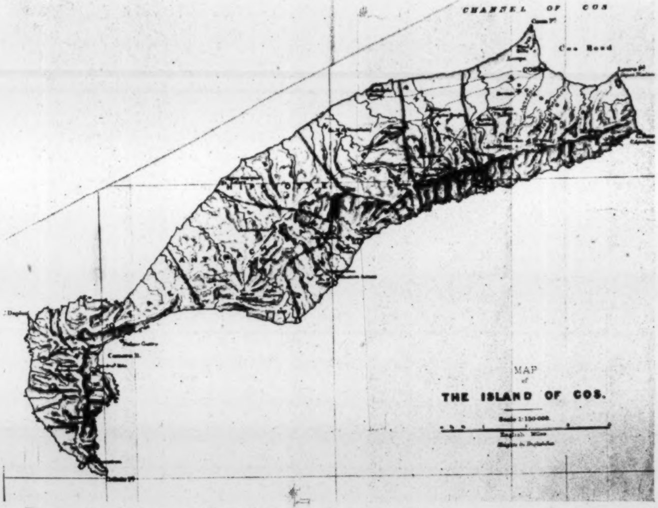

FIG. 7. MAP OF DEMES OF ISLAND OF COS: ISTHMOS (ISTMIOTAE), ANTIMACHIA (ANTIMACHIDAE), HALASARNA (HALASARNITAE), HIPPIAS (HIPPIOTAE), HALEIS (HALENTII), PHYXA (PHYXIOTAE). (ACCORDING TO PATON-HICKS, INSCRIPTIONS OF COS, OXFORD, 1891.)

and not only of Cos but also the pride of the entire population of this famous island celebrated throughout eternity through him,—the question arises was this Hippocrates ever in the temple itself of Asclepios. This question must be answered in the negative. He was as a matter of fact never in the town of Cos which is still the main city of the island and still proudly bears the island's name.

Fig. 7a.

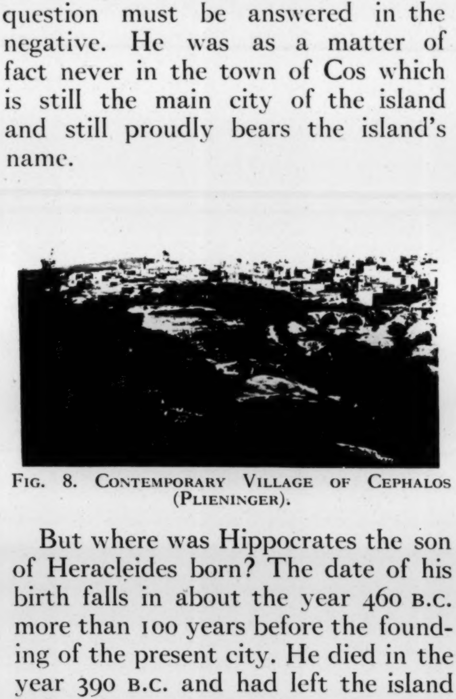

Fig. 8. Contemporary Village of Cephalos (Plieninger).

But where was Hippocrates the son of Heracleides born? The date of his birth falls in about the year 460 B.C. more than 100 years before the founding of the present city. He died in the year 390 B.C. and had left the island before it was exposed to the transformation consequent on the Peloponnesian war.

According to history this Hippocrates pursued his medical investigations in connection with the study of patients who came for help to one of the temples of Asclepios at Cos and perhaps also, and more likely, in a study of those case histories which had been preserved. For these studies there was opportunity both in Astypaleia on the isthmus near the present town Cephalos (Fig. 8) as well as in the deme of Haleis and at Halasarna. It is altogether probable that he obtained insight into these matters in all the temples of Asclepios on the island where such records were preserved. Evidence for the existence of an Asclepieion near Cardamena in the deme of Halasarna is to be found in the fact that there there was also a temple to Heracles and the important seat of the Coan branch of the family of Heracleides, from which both the mother and grandmother of Hippocrates were descended. Unfortunately it is not yet known concerning Praxithee and Phainarete that they actually came from Halasarna.

Fig. 9. View from Village of Bay of Camára and Small Islands, and Farms with Surrounding Orchards.

Another matter of interest which may not be neglected is that there should exist in the environment of a student who intends to practise the healing art a certain fairly large population so that he might acquire his training through large clinical experience. It goes without saying that he often had travelled throughout his own small island home before wandering along the shores of Asia Minor and through Thrace, Macedonia and Thessaly in the course of which he acquired his great climatological and epidemiological experiences. But even for his early practise a certain amount of clinical material must have been available. In the middle of the fifth century before Christ such opportunities were available only in the neighborhood of the chief port of the island in the main town of Cos. The large number of graves and cemeteries found on the slopes to the east of the ancient city still yields evidence to show that the population in the fifth and fourth centuries must have been considerable. All the evidence seems to point to the assumption that the period of the youth of the great Hippocrates must be imagined as having been spent in the ancient city on the bay of Camára even if it cannot be demonstrated that this was also the place of his birth.

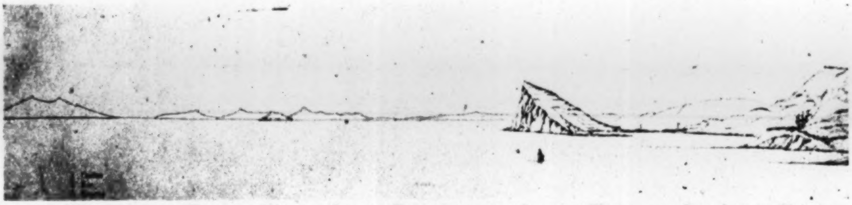

FIG. 10. VIEW FROM CNIDOS WHICH IS IN FOREGROUND (ISLAND TRIOPION, SOUTHERN HARBOR AND HEIGHTS WITH RUINS) TOWARD WEST SIDE OF THE LONG DRAWN OUT ISLAND OF COS AND IN FRONT OF THIS THE SMALL ISLAND HYÁLI; AT NUMBER 2 ARE TO BE SEEN HEIGHTS OF ANTIMACHIA; AND FARTHER TO RIGHT, SLOPE OF CHRISTOS. (FROM NEWTON, HISTORY OF THE DISCOVERY OF HALICARNASSUS, CNIDOS ETC., 1862, VOL. 1. PLATE LXVII.)

To this inference is to be added a local tradition which Ludwig Ross uncovered in May 1844 (Fig. 9). He was told as he was wandering through the harbor of Cephalos that on the rocks of Palaeonisi which as has already been related were connected with the shore by means of a mole, Hippocrates once upon a time composed his writings. This legend (narrated by Ross) is the only piece of information about the great man which the region has so far yielded. It has the advantage that it coincides with the considerations which we have just weighed.

The place of birth of the great Hippocrates son of Heracleides is to be sought therefore in the ancient deme of Halasarna or in the deme Isthmos on the island of Cos and with considerable probability in the latter place, in the old capital of the island (Fig. 10).

AN ORIGINAL DRAWING OF THE TITLE PAGE OF VESALIUS' FABRICA

By LE ROY CRUMMER, M.D.

LOS ANGELES, CALIF.

QUITE universally accepted at present that Johan Stephan von Calcar made the anatomical drawings for the "Fabrica" of Vesalius, there was a long period during which these drawings were credited to some other artist, in spite of the very definite expressions of Vesalius himself, in the conclusion to his "Epistolae," that he hoped for the assistance of his friend and countryman, von Calcar, in this undertaking. Titian was most frequently mentioned and in fact, his name appears alone upon the title page of the Bonavera edition of about 1670. Tortebat, at the end of the preface to his "Artistic Anatomy," (1667), says: "Concerning these figures, they are after those which Titian has designed for the book of Vesalius." This statement was carried through all subsequent editions for nearly a century and is found even in the German translation. Maschanbaur, who reprinted two editions from the original wood blocks (1706, 1723) also ascribed the cuts to Titian. Even as late as the middle of the nineteenth century, Ambroise Firmin Didot was convinced that Titian designed the drawings. Moehsen, 1721, our leading authority on the graphic arts in medical history, states: "Up till now, all critics and art lovers, have come to the conclusion that Titian has drawn the figures from dissections and preparations of Vesalius." This author does mention von Calcar as drawing directly on wood blocks and intimates that he was the wood cutter, nevertheless, the whole argument of Moehsen is definite in indicating Titian as the artist.

While the publishers and medical historians were thus in doubt, the art critics, following Vasari, properly assigned these drawings to von Calcar without anywhere, as far as I have been able to find, definitely mentioning the title page. John Evelyn, to whose diary we owe so much for his comments on points of interest in medical history, says in "Sculptura" (1622), "Nor lesse Worthy of Commendation . . . as always those eleven pieces of *Anatomie* made for *Andrea Vesalius* design'd by *Calcare* the *Fleming*, an Excellent Painter." Cesio on the holograph title page of the manuscript of his art lectures, 1679, lost for many years, definitely ascribed the anatomical drawings he had copied to Fiamingo, one of the numerous names used by various authorities for von Calcar.

It is scarcely necessary to enter into the details of the later investigations of medical historians which have definitely settled the discussion in favor of von Calcar. With little discussion, Choulant, 1852, accepts von Calcar and in an appendix to Frank's translation of Choulant, 1920, Garrison and Streeter quietly state that this artist drew the designs. Roth, 1922, admits that von Calcar had a part in the production of the anatomical drawings, but in his hero worship credits Vesalius with enough artistic ability to have drawn many of the illustrations himself.

One of the skeleton figures of the "Tabulae," (1538) is signed by von Calcar, so there is no doubt of his assistance in the preparation of these hasty sketches which were published "at the expense of" the artist. Comparison of the drawings of the "Tabulae" with those of the "Fabrica" demonstrates a tremendous improvement in the power to see and to execute on the part of both anatomist and artist in the short time intervening between the publication of the two books. Even if the idea of the "Fabrica" was conceived immediately after the publication of the "Tabulae," there remained a scant five years for the production of the former; but Roth definitely states (p. 99) that the "Fabrica" was begun on January 1, 1539, and the dedication is signed, Pavia, August 1, 1542. Thus only three and a half years intervened between the conception and completion of this tremendous work, epoch-making both from an artistic and an anatomical standpoint. When one considers the involved planning necessary in the preparation of such a book, the many sketches required to transpose the outlines of soft anatomy to the firm ideal figures ultimately depicted, the numerous dissections and the even more numerous drawings from these dissections, the final selection of the best drawings, the training and supervision of the woodcutter, it would seem that three and one-half years was a remarkably short time for the preparation of two hundred and four wood blocks, the more remarkable if the work was done by a single individual.

It has always seemed to me that this was more than any one man could do and instead of attributing all this work either to von Calcar, or to Titian as was done erroneously so long, it is more probable that the work was accomplished by a group of men working closely together as was the custom in the ateliers of the great artists of the Italian Renaissance, but with one, most certainly von Calcar, responsible for the finished work. Spielmann expresses the same idea and even indicates the artist responsible for the panoramic landscape of the musclemen, Campagnota. Such an assumption explains the aspersions cast by Vesalius himself in various places in his letters upon his artists, always spoken of in the plural.

The woodcut portrait of the "Fabrica," repeated in both the Latin and German editions of the "Epitome" and also used, much worn, in the first edition of "Epistolae . . . radicis Chynae" (Bale, 1546) has been universally accepted as the work of von Calcar, and is considered the one authentic portrait of the great anatomist.

Recently, a previously unknown drawing of the title page has come to light (Fig. 1) which gives opportunity for opening a discussion concerning this title page, as epoch-making artisticly as the "Fabrica" was from the standpoint of anatomy. In his original concept of giving to the world in printed form the results of his years of effort in anatomical investigation, Vesalius seems to have planned to the last detail the form and appearance of this epoch-making book. He frequently speaks of his constant association with the artists, and we know from his own words that he selected for the printer, a man he considered most learned, Oporinus of Bale, though he might have had the book

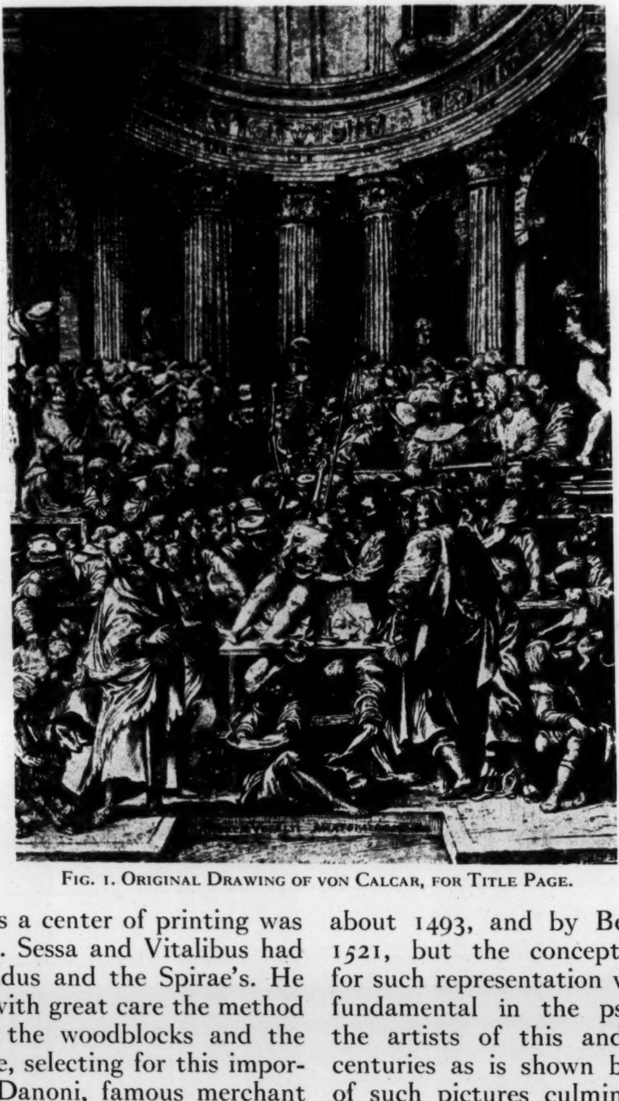

Fig. 1. Original Drawing of von Calcar, for Title Page.

printed under his own eyes at Venice, only an hour away from Padua; but at that particular time, the fame of Venice as a center of printing was diminishing. Sessa and Vitalibus had replaced Aldus and the Spirae's. He also chose with great care the method of sending the woodblocks and the text to Bale, selecting for this important duty Danoni, famous merchant of Milan, so it is but reasonable to suppose that he paid equal attention to the preparation of the title page. The idea of the representation of an anatomical amphitheatre on the title page was by no means new, in fact, such woodcuts were used in the Lansberg edition of Mundinus of about 1493, and by Berengarius in 1521, but the concept and desire for such representation was deep and fundamental in the psychology of the artists of this and subsequent centuries as is shown by the scores of such pictures culminating in the Anatomy Lesson of Rembrandt. But just as Rembrandt stands out above the other painters of his time, so this woodcut excelled any other anatomical title page, before or after, in spirit, sense and suggestion. Neither the wood engraving copied from this woodcut by an unknown artist and used in the 1555 edition nor the copper engraving of the famous Wandelaar for the 1725 edition successfully reproduce the inherent charm of the original woodcut of 1543, where each diamond of cross hatching has been cut out laboriously by some steaming workman.

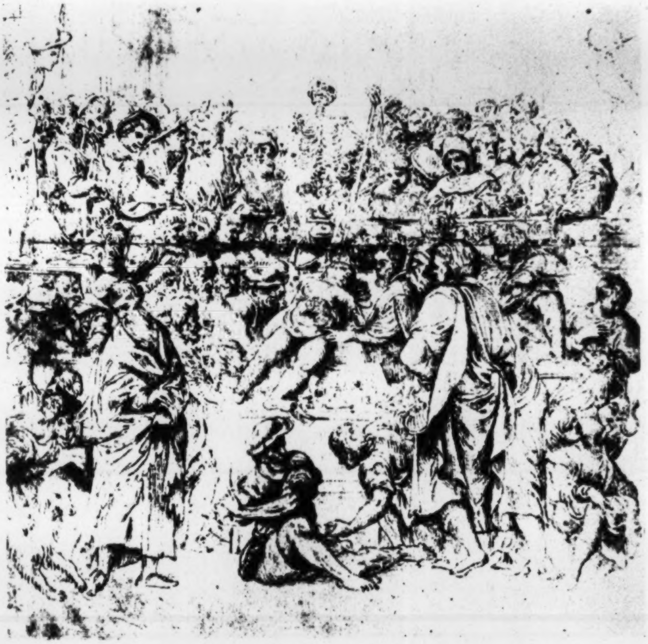

FIG. 2. STOCKHOLM DRAWING.

The details of this title page have been discussed both from an anatomical and artistic standpoint, and many authors have been led into a consideration of its symbolism, without perhaps realizing the attempts to interpret the symbolism of the sixteenth century in terms of the twentieth requires greater psychological insight into the period in question than is possessed by most men. The costumes, the various types of students and visitors represented in the figure group, have received attention from many authors, although of course the individual figures can only be representative of the five hundred attendants known to have visited the anatomical demonstrations of Vesalius.

Roth contents himself with a short discussion of the details and symbolism of the title page without expressing an opinion concerning the artist. Spielmann gives the formal attribution "anonymous" for the title page, but in the same paragraph states: "drawn in all probability by Jan Stephan van Calcar," so this newly discovered drawing, if authentic, merely adds confirmation to generally accepted opinion.

Previously there had been known

two drawings of this title page, one in Stockholm (Fig. 2), and one in the Hunter collection in Glasgow (Fig. 3). Kristeller has discussed the Stockholm drawing and raises absolutely no question of its authenticity; though from other sources objections have been made at different times, based primarily upon the date, 1675, which may be seen on the lower edge. One very distinguished art critic assures me that the Stockholm croquis is distinctly in the style of the French school of the latter half of the seventeenth century, and even demonstrated to me the great similarity of this free hand drawing to the work of Raymond La Farge.

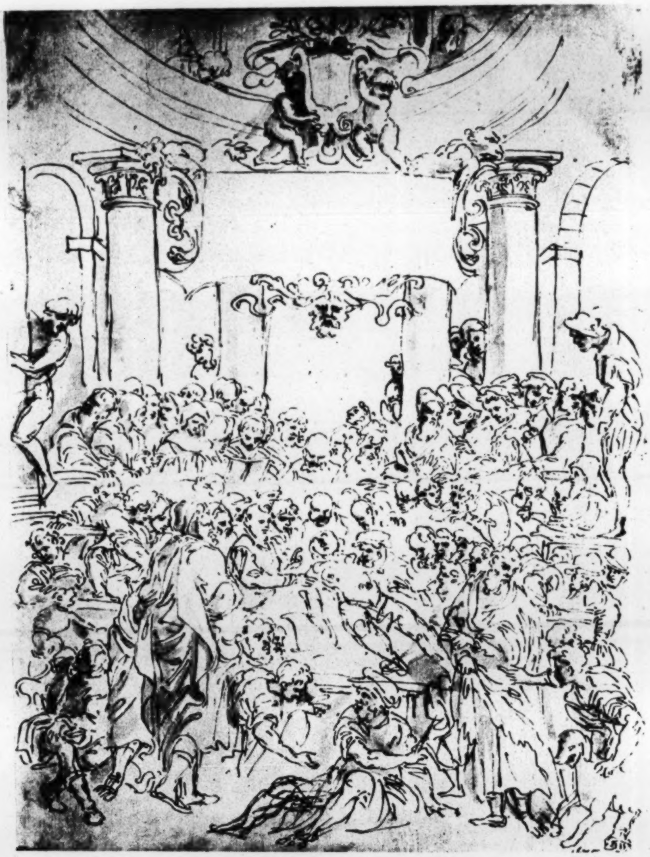

Fig. 3. Glasgow Drawing.

The Glasgow drawing in the Hunter collection was one of the items bought by William Hunter at the Mead sale 1755. This drawing has been discussed by Spielmann, who expresses many doubts of its authenticity, only in the end to seem to be halfway convinced on what appears to be the most trivial evidence, that this particular drawing may be original and genuine. Spielmann, usually so positive, really leaves the readers somewhat in doubt as to his exact opinion. In his analysis, he states: "There has been much discussion concerning it" but in a letter, he tells me that this discussion has been entirely verbal, and therefore is not a matter of record.

This newly discovered drawing is the third both in point of record and sequence. Little is known of the provenance, except that it was secured by a German print dealer by private treaty when the famous Senngracht collection of original drawings was dispersed in Holland, three or four years ago. With the drawing, the dealer submitted this certificate:

DIREKTION
Des Kunstegewerbe Museum,
Frankfurt, Jan. 16, 1926.

The pen drawing in sepia showing an anatomy lesson, size 34.5 × 24.5 mm. signed Johan Stephanus, inv. 1540, Venetiis, which was presented to me by Max Ziegert, I consider an original drawing of Johan Stephanus von Calcar, born at Calcar, 1499, died at Naples, 1546, and in truth the exact comparison with a copy of the Anatomy of Andreas Vesalius, Basle, 1543, which is in our collection, shows that the above named drawing is the study reversed to the woodcut title of this book.

(Signed) Dr. V. Von Lieves,
Scientific Assistant.

The drawing itself is on thin paper mounted on heavier boards; it is done with pen in sepia, and measures 34.5 × 24.5 cm. The paper is of course browned with age and an old damp stain in the upper right corner dulls the reproduction. The title page including line borders is 35.5 × 25 cm., a difference not greater than to be explained by the varying shrinkage of different papers in nearly four hundred years. The drawing is of course in reverse from the woodcut. The mounting prevents study of the paper for water marks or filigrane, but under the glass, the pen strokes are free, clear and distinct. In other words, there is no sign of break or distortion of lines as might be expected if this were a tracing. Since the pen strokes are on the upper surface, there can be no possibility of reversal in mounting.

Written on the very lower edge is "Joh. Stephanus, inv: 1540, Venetiis." This is written in ink which has faded equally with the lines of the drawing, which is made quite evident since someone has later written just above this signature in ink which has not faded, "Andrea Vesalii, Anatomia, Corp. Hum." The signature might present some difficulty on account of the form, "Joh. Stephanus," but it must be remembered that this is his real name which has gradually been altered by the more modern historians so that his home designation, von Calcar, has generally superseded the forms of the name previously used. Many of the sixteenth century authorities refer to him as Fiamingo, a much broader birthplace designation. The date 1540, and the place, Venice, fall well within the time and place of probable execution of the drawing, but the date contradicts Roth's statement that the title page represents the last dissection of Vesalius at Padua in the year 1542, but it may well be a representation of his second reported dissection there, that of the "Priesterdirne." Nevertheless, it is doubtful if this signature could be identified as genuine, since as far as I have been able to find, no authenticated signature of von Calcar has survived. It is not an uncommon practice for an owner of an unsigned drawing to add the artist's name. Even such an assumption adds to the validity of this drawing, for as I have mentioned above, long-continued belief that Titian drew the illustrations for the "Fabrica" makes the signature valuable evidence if it were added by someone before the middle of the eighteenth century: a very superficial glance will demonstrate that the signature and drawing however are contemporary, and so the signature substantiates the idea that the drawing is original and not a reversed copy made later from the wood cut.

Comparison of the drawing with the title page naturally falls into three parts; the figure and grouping, the architecture with its detail, and the additions found on the title page which are not in the drawing, i.e., the cartouche and the monogram of Oporinus.

The mass grouping of the figures is the same and follows closely the idea presented in the preliminary sketch of the Stockholm drawing, and elaborated in the Hunter croquis. It might be noted that the Stockholm sketch is reproduced direct in the frontispiece, while the one in Glasgow and this one are both reversed, a normal sequence if all are genuine. Certain details of this drawing vary from the printed title page. The dim figure to the right of the central pillar is absent. The dog in the right lower foreground of the title page has an open mouth, closed in this drawing. The famous eye glass of the old man in the back seat of the pit on the right of the frontispiece is not found in the drawing, but the hand and fingers are shown in the same awkward position, and the eyes glass could have been added either on a later drawing or on the wood block to give effect to the bizzare index finger. Other slight differences in the line or design may be noted throughout.

Most important however is the central figure, that of Vesalius himself, spoken of as "the small portrait." Spielmann depreciates this thumb nail sketch: "The lack of resemblance between head and face and those of the woodcut standard portrait is startling," and after seeing a photograph of this drawing, he writes me: "It is curious that the head of Vesalius is even less like the "Fabrica" portrait in your drawing than in the block, and the whisker and beard are differently rendered" His further argument concerning the small portrait in his "Iconography" fails to be convincing. He speaks of the smallness of the cranium and the shape of the beard, and in discussing the Glasgow croquis, he objects to the way the hair is cut. A slight slip of artist's pencil or graver's knife in a thumb nail sketch is sufficient answer to his first objection, and the date of the most recent visit to the barber easily explains the immaterial points of length of hair and cut of beard.

In the small portrait in this drawing, the shape of the nose, the high cheek bones, the position of the neck and head, are exactly such as might be expected from familiarity with the standard woodcut portrait. In fact, considering the size of this small portrait and the mediun in which it was executed, the similarity is remarkable. Comparison of the thumb nail portrait in the two drawings with the woodcuts of the 1543 and 1555 editions of the "Fabrica," both done under the personal direction of Vesalius, gives a most convincing argument for the authenticity of the drawing (Fig. 4). In the Glasgow croquis, as in this drawing, the face is almost in profile, and the eyes are directed to the dissection. In the woodcut of the title page of the 1543 edition, the face is turned slightly to the side, with the eyes turned to the front toward an imaginary audience, while in the 1555 title page, a wood engraving, the central figure is seen almost full face with the eyes staring into the eyes of the reader. Such variations, I think we may assume, were not the changing concepts of a good artist, but were corrections insisted upon by Vesalius, the whole quite in keeping with his character.

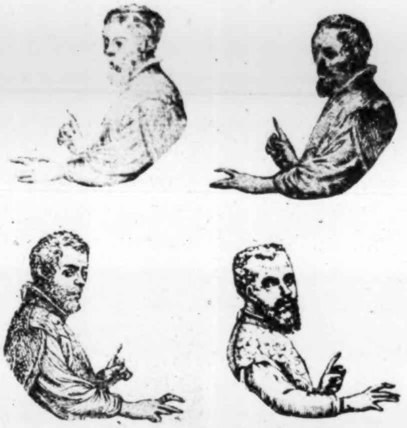
FIG. 4. "LITTLE PORTRAIT." A. FROM GLASGOW DRAWING. B. FROM THIS DRAWING. C. FROM 1543 TITLE PAGE. D. FROM 1555 TITLE PAGE.

The sequence of ideas in the concept of the architectural background is also of interest. The massive lecture hall with pit and foyer, and balcony supported by seven pillars, is of course a flight into fancy, since there was no real anatomical theater at Padua until 1583, and Vesalius undoubtedly gave his lectures in a temporary hall of the utmost simplicity. The architectural background is merely suggestive in the Stockholm free hand drawing, and practically omitted in the Glasgow croquis although the figure grouping is almost as finished as in this drawing where the vast architectural plan is as finished as in the woodcut itself. Comparison of the finished lines and almost perfect perspective of this background with such structural details of the students' benches and the anatomical table as shows through the mass grouping of the figures seems to indicate that von Calcar must have called to his aid some other artist to plan the perspective and draw in this massive background.

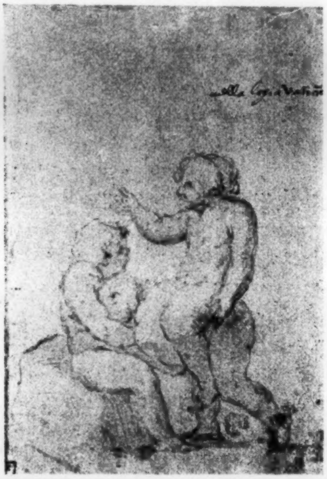
FIG. 5. ORIGINAL DRAWING FROM REYNOLDS COLLECTION, ATTRIBUTED TO VON CALCAR.

A single glance at the drawing is sufficient to demonstrate to what extent the beauty of von Calcar's concept was destroyed by the forced introduction of the upper cartouche. Vandelaar recognized this impairment, and left out this cartouche entirely when he copied the woodcut in copper for the 1725 edition of Boerhaave and Albinus. Von Calcar provided in the drawing an inset at the bottom where the floor is cut sufficiently to allow the introduction of the type block for the title. This lower cartouche was used for the privilege in the 1543 title page. It probably was not large enough for the elaborate title desired either by author or printer, so the upper cartouche was added. This must have been an afterthought since in effect it crushes down the upper part of the background, destroys the perspective and gives a "pasted on" effect which detracts materially from the fundamental idea. This cartouche (Fig. 6) is all Vesalius; his name, his titles, and his arms, all enclosed in an *encadrement* which, beautiful and significant as it may be in itself, does not belong to the picture. The decorations of the cartouche have been the cause of much discussion. The weasels of Vesalius' coat of arms have occasionally been mistaken for greyhounds, which has at times led far afield the consideration and interpretation of the original arms of Vesalius. There has further been some argument concerning the originality of von Calcar's two *putti* which support the frame work. It has been asserted that von Calcar copied this idea from an engraving by Beham published in 1544. Though it is generally admitted that von Calcar imitated Titian and perhaps Raphael in his painting and manner of work, it is doubtful if anyone could claim originality in the representation of nude babies. In the Sir Joshua Reynold's collection of original drawings sold after his death, there was one attributed by him to von Calcar (Fig. 5): this drawing represented three naked children at play, and in outline, moulding, and attitude these figures are not dissimilar to the *putti* of the cartouche.

No satisfactory explanation of the introduction of the monogram of Oporinus, the interlined 10, absent in the drawings but seen above and to the left of the upper cartouche in the wood block, has ever been given. The use of the monogram of a printer in this way was practically unknown at the period, and it is found in this edition only, having been omitted in the 1555 wood engraving. A woodcut is done in cameo while a copperplate is cut in intaglio; therefore, additions and changes are possible in a copperplate engraving while only omissions created by cutting down the lines can be made in wood blocks, except where a portion of the block is cut out and a new piece substituted. This method usually leaves the junction lines visible on the print. These lines are not to be seen in the frontispiece so it must be assumed that the monogram of the printer was added before the block was finished, obviously at the request of Vesalius and in honor of his friend Oporinus.

An analysis of this drawing based on each of these material features seems to demonstrate that it is much more probable that this drawing was done for the title page than that it is a later copy made from the printed woodcut.

The recent Duveen trial has shown how difficult it is to go beyond opinion however, in establishing the authenticity of artistic products of the Renaissance, so assuredly it is quite impossible to demonstrate this drawing as a genuine work of von Calcar. The opinions of those who have had opportunity to see the drawing vary from complete skepticism to extreme approbation. One of the skeptics after seeing the drawing said: "I can't tell you why but I just feel that this is not original; another pointed out a certain line in the drawing as being quite impossible from such an artist as von Calcar, and yet comparison showed that this particular line was exactly the same in the frontispiece. One distinguished medical historian and art critic wrote concerning the drawing: "How in the world can any one say whether a given drawing was made for the "Fabrica" frontispiece or from it? It would need a lot of proof. When I first saw the Stockholm croquis, I took it for granted that it was a nonchalant sketch for the book, but, alas, as one gets older, one becomes more sophisticated. The filigrane of the paper might tell something, still, there is no reason why someone in Oklahoma should not draw on a paper from *cinquecento* Padua."

After seeing a photograph of this drawing, Mr. Spielmann writes me; "It is very highly finished for a pen drawing, but I must say that my first impression is that it must have been done by an accomplished draftsman *from* the wood-block (1543), and not done *for* the wood-block . . . It is a question whether or not priority is shown in the details of the cartouche being omitted and the masked portion of the architecture therefore revealed."

On the other hand, there have been expressions of approval from critics and students of the period equally definite. Professor Sudhoff was kind enough to endorse on the back of the mounting: "Gesechen und aufs höchste annerkennt." My friend, M. Seymour de Ricci, the distinguished art critic and bibliophile, writes: "I believe this to be—like the Glasgow drawing—a genuine and original drawing by Jo. Stefan Calcar, for the frontispiece of Vesalius. It is unquestionably a XVIth century Venetian drawing, and the signature and date have every appearance of being genuine."

Even with this lack of agreement, this drawing seems to fit in as a step in the preparation of the great work of Vesalius, and around it and the two other known drawings may be built a theory which explains many of the disputed points in Vesalius' letters, and brings to the fore again the great interest which Vesalius took in each detail of the "Fabrica."

Granting, even if only for the purpose of building up a fantasy, that the drawing in Stockholm, the one in Glasgow, and this one, are all genuine, it is very easy to imagine the proper sequence which would include all three in a very tenable theory: The Stockholm drawing was a hasty free hand sketch in which von Calcar presented to Vesalius his idea for an appropriate title page for the forthcoming book on anatomy: The sketch was approved and the artist then started the drawing which is now in Glasgow. He elaborated the figure group to the extent of considerable detail and then roughly sketched in the architectural background, only to be dissatisfied with the perspective, he must have realized that he needed help for the massive architecture he had in mind, so he asked assistance from one of his friends in Titian's studio, who planned and made the background, and so by collaboration the drawing, dated 1540, was made; but Vesalius, not quite satisfied, insisted upon changes in the small portrait and wished to have added the upper cartouche for the title, and the monogram to honor the great printer. Under protest, realizing how much these changes would mar his original concept, these additions were finally carried out by the artist. Von Calcar's protest and the subsequent argument may have been the basis of a quarrel between Vesalius and his "artists" and incidentally the cause of the omission of all later direct reference to von Calcar in the readily written letters of the great anatomist.

These assumptions are quite in keeping with the character of Vesalius, who in spite of his genius, was most truculent and cut many of his friends and associates by word of mouth or pen for most trivial differences of opinion. The use of many different studies and collaboration with different artists in the production of a great work was commonplace in the ateliers of the artists of the past, and such technical tricks are not unknown to modern artists.

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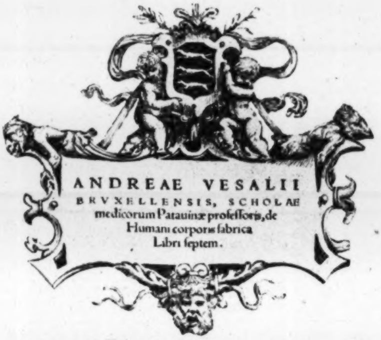

Fig. 6. Cartouche.

ON HIPPOCRATES AND THE APHORISMS*

By BURTON CHANCE, M.D.

PHILADELPHIA

THE object of this address is to do honor to the greatness of Hippocrates, and to serve as a fitting introduction to a brief account of the "Aphorisms" and to the exhibition of a tiny pocket edition of that useful book. (Fig. 1.)

When we speak of "Hippocrates," we refer to a definite person who lived in the ancient Greek world, whose life and works have been taken as the embodiment of the ideal medical practitioner during the century of the highest development of the Greek mind and whose character has served as the model for practitioners in all the succeeding ages. When we speak of the Hippocratic "Works," or "Corpus," or "Writings," we refer to that collection of medical records which had been accumulating from the earliest times until they were collected together to serve as guides for Hippocrates and others from the fifth to the second century B.C., which have served ever since as beacon lights in the voyage through life of practitioners of the science and art of medicine. Notwithstanding this distinction, we, today, in common practice with our forefathers and Hippocrates' descendants, speak of him and of the teachings of the "Corpus" as of a person into whom the individual and the works had become fused and from whom all the knowledge emanated.

Many distinguished persons are mentioned in classical works who bore the honored name of Hippocrates. Some were generals, others tyrants and philosophers while eight of the number were physicians, and yet but one, Hippocrates II, surnamed the Great, and styled in more modern times as the "Father of Medicine," remains famous at this day.

And yet, he is only historically the "Father" of medicine. He was not its author, its creator, nor even its founder. When he was born there were many cultivators of the healing art, and no mean literature of medicine and surgery already existed.

Hippocrates was the son of Heraclides, a physician, who belonged to an ancient and illustrious family, in a long succession of physicians. It is claimed for him that he was a lineal descendant of Asclepius, in the eighteenth generation; certain it is that he belonged to the order of the Asclepiadae, or hereditary physicians.

It was in the famous and favored city of Cos that Hippocrates the Great was born, in the first year of the 80th Olympiad, which corresponds with the 460th year before the Christian era. This is the commonly accepted year of his birth, on the authority of Soranus of Cos, though some biographers have made it a few years earlier. The exact date of his birth was known, however, and celebrated at Cos with sacrifices on the twenty-sixth day of the month Agrianus, but it is not now known to what month this corresponds in any other calendar.

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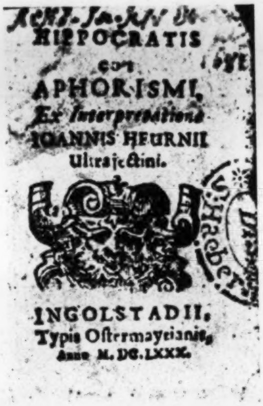
*Read before the Section on Medical History, College of Physicians of Phila., Feb. 19, 1929.

Cos is one of the most renowned of the beautiful chain of islands scattered about the Aegean Sea, lying near the western coast of Asia Minor, in about the latitude of lower Virginia. It is five miles broad and twenty-three miles long, blessed with a mild and balmy climate. It was inhabited successively by various peoples, and in later times it was colonized from Epidaurus, the capital of Epidauria, an independent state on the Grecian mainland, near which city was the temple of Asclepius, frequented by patients from all parts of the Hellenic world. Cos was its principal city, destroyed, alas, in later times by a severe earthquake. It is memorable as the birthplace not only of Hippocrates, but of some of the most renowned men of antiquity. The little island is referred to in Homer; and was commercially noted for its precious unguents and purple dyes, but more especially for the superiority of its wines and for the light transparent dresses called *Coae vestes*. The new settlers had introduced the worship of Asclepius, and, in time, a school of physicians was attached to its temple, the great collection of votive models long retained there made it a kind of museum of anatomy and pathology.



HIPPOCRATIS
COI
APHORISMI,
Ex Interpretatione
IOANNIS HEURNII
Ultrajectini.

INGOLSTADII,
Typis Ostermayrianis,
Anno M.DC.LXXX.

FIG. 1. TITLE PAGE, AUTHOR'S COPY OF HEURNE'S "APHORISMS."

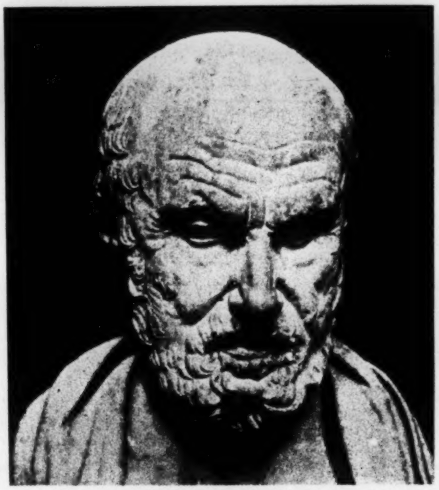


FIG. 2. HIPPOCRATES. SECOND OR THIRD CENTURY, B. C. (BRITISH MUSEUM.)

Many absurd and untrustworthy stories are related concerning the personal life of Hippocrates; it is, nevertheless, definitely known that he was given the education and training common to all well-born youths. In the polite literature and philosophy of the age, he was instructed by two men of classical celebrity, Gorgias and Democritus, the latter a student of medical science, at least of comparative anatomy and physiology. He was initiated into rudiments of medical knowledge, and no doubt practiced his art in that great school of medicine, the Asclepion of Cos, for it is well known that these temples were both hospitals and institutions for the training of physicians. While here he saw the good and evil effects of gymnastic exercises in the cure of diseases, being under the tuition of

Herodicus who was the first person known to have used these as a branch of the art of medicine.

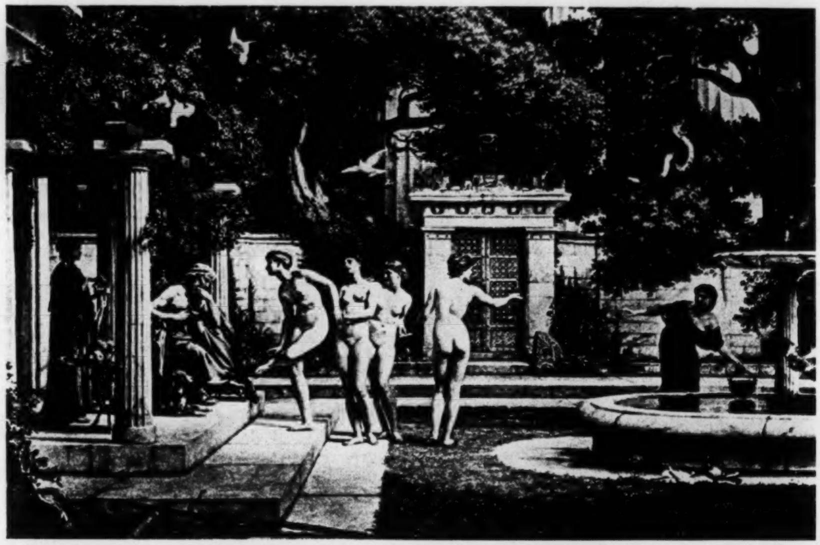


FIG. 3. FROM POYNTER'S "A VISIT TO ASCLEPIUS."

He early became celebrated and left his native island, visiting Thrace, Delos, Thessaly, Athens and more remote regions where it is presumed that he not only practiced his profession but lectured upon medicine and surgery, being everywhere respected, honored and fairly venerated on account of his profound wisdom and consummate skill. It is known that he took pupils for a fee.

According to all accounts, he spent the latter part of his life in Thessaly and, in Larissa, he died at an advanced age, variously stated by different authorities; thus we find it given at eighty-five, ninety, one hundred and four and even one hundred and nine years.

Hippocrates lived in an age of extraordinary intellectual development. He had for his contemporaries Pericles, the famous statesman; the poets Aeschylus, Sophocles, Euripides, Aristophanes and Pindar; the philosopher Socrates, with his distinguished disciples Plato and Xenophon; the venerable father of history, Herodotus, and his young rival, Thucydides. He was surrounded by the unrivalled statuary of Phidias and his illustrious pupils; and to this list could be added many other eminent names of those whose fame has shed luster on the pages of human history. During this time flourished Artaxerxes Longimanus, King of Persia, who for forty years sat upon the throne in Babylon. Nehemiah and Ezra, whose sacred books bearing their names had not yet been written, were by this king's consent and aid engaged in the rebuilding of the ruined walls of Jerusalem. Confucius and Zoroaster only a few years previous to the birth of Hippocrates had ended their careers in the Orient.

Medicine had been studied, practiced and taught long antecedent to

Hippocrates from traditional and recorded observations and the experiences of previous ages. In Greece it had been derived from those remarkable hospitals and dispensaries, the Asclepian temples; from the practice of the gymnasia, and from the teachings of the Pythagorean philosphers. The mention of previous medical writers in Hippocrates proves the correctness of this statement.

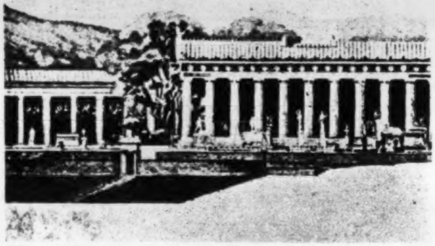


FIG. 4. RESTORATION OF PART OF ABATON AND OF TEMPLE OF ASCLEPIUS. (DEFRASS.)

The temples of Asclepius, scattered over many parts of Greece, were the popular sanitariums or hospitals of the age. They were located with special reference to salubrity of the climate, and, where practicable, in the vicinity of medicinal and thermal springs, surrounded by lofty groves, shady avenues and fragrant gardens. The temples were among the noblest and most imposing examples of Grecian architecture. Ornate in detail, they were adorned with the most admirable works of the painters and sculptors of a country so famous, even then, for the culture of the fine arts. Here were to be seen impressive statues of the presiding deity, Asclepius, and his daughters Hygeia and Panaceia. Hither the sick and wounded resorted for medical and surgical treatment, which was faithfully administered by the Asclepiadae who had become skillful by systematic instruction, by clinical experience, and by the study of the accumulated records of numerous cases, many of which had been preserved in sculptured votive tablets, in accordance with a time-honored custom.

Of all the temples of Asclepius existing at the beginning of the fifth century of the era, that of Cos was the most celebrated. The Asclepion contained many admirable works of art. Since 1900 excavations on the slope of Mount Prion, about two miles from the town of Cos, have exposed the precinct of Asclepius, with its terraces, groves, temples and other buildings, the earliest dating from the sixth century B.C. In the midst of the precinct is a fountain of water with medicinal properties, which, it has been believed, connects with the famous fountains of Hippocrates in the mountain above.

According to Plato, Hippocrates was an Asclepiad. Once it was believed that the priests of the temple of Asclepius combined the functions of priests and physicians, thus ascribing to Hippocratic medicine an origin in temple practice.

The Asclepiadae, according to another view supported by the scantiest of positive evidence, were a guild, supposed to have been founded by Asclepius, the members of which swore the Hippocratic Oath. Yet, the term "Asclepiadae" means literally "the family of Asclepius," and it is at least possible that the Asclepiads were a clan of hereditary physicians who claimed to be descended from Asclepius. It would be very easy for such a family to develop into something like a guild by the admission, or rather adoption, of favored outsiders.

In this way the terms might readily acquire the general meaning of medical practitioners.

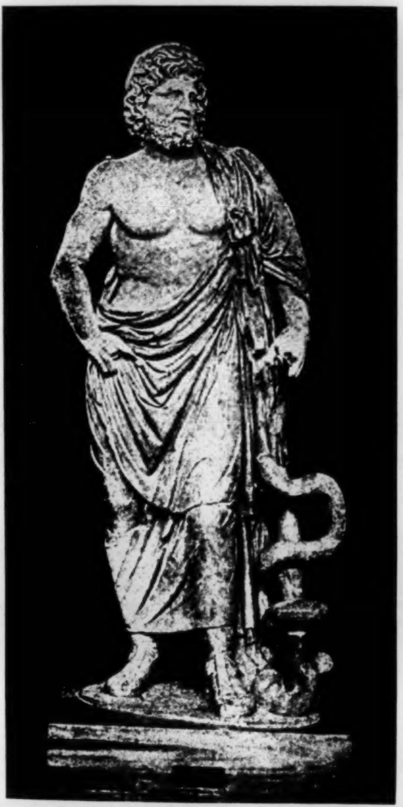


Fig. 5. Asclepius, Ancient Greek Deity of Healing.

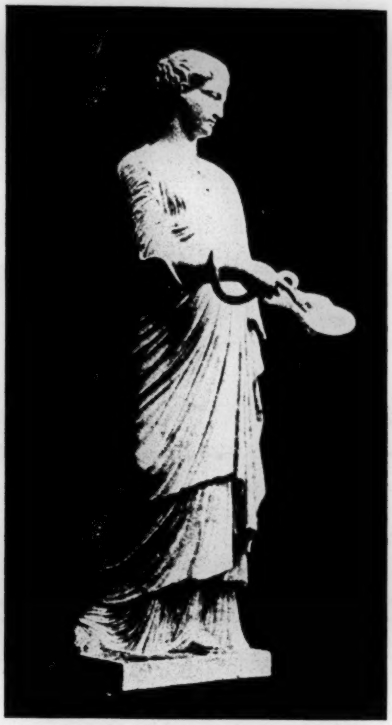


Fig. 6. Hygeia, Greek Deity of Health. (Wellcome Museum, London.)

When we think of medicine in the ancient Greek civilization we must not employ that conception of the science which we now entertain, because such a concept did not then exist. To the Greeks, "disease" was the summation of the morbid phenomena which could be perceived with their unaided senses, the course of which could be observed through the seasons, subjected to the effects of climatic and geographical atmosphere, in opposition to which the afflicted patient, in order to recover his health, must modify the ordinary course of his living. The physician of that age could know nothing more than what could be obtained by such observation; beyond this all was conjecture and hypothesis. Indissolubly with their imperfect understanding of the true nature of a malady was the belief that all disease was of divine origin. By the time of the fifth century the Greeks sought to cast off the mists, the vapors and futile hypotheses. In their places they assumed a philosophical attitude by which they endeavored to reduce all thought of phenomena to a uniformity of idea, which only led to guess work and to the neglect of fact. Philosophy therefore superseded religion. Toward the end of the century, happily, much was accomplished leading toward a rational system. By the time of the Hippocratic School, medicine had become freed from the religious and philosophical dogmas and assumptions, and, in addition, reliance was laid upon accurate observation and knowledge from accumulated experience. Much dependence, however, was put on the notion that environment and the, supposed, composition of the constitutents of the human frame governed health and disease. The best physicians were content if they could put forward generalized conclusions from actually observed cases, rigidly guarded themselves from any attempt to explain disease by more immediate and hypothetical causes, and avoided vague speculation as useless. Many of their thoughts have now become household words, and they have become so largely as a direct heritage from these ancient physicians. But it must be remembered that ideas so familiar to us were with them the result of long and carefully recorded experience and are like nothing that we encounter in the medicine of other ancient nations.

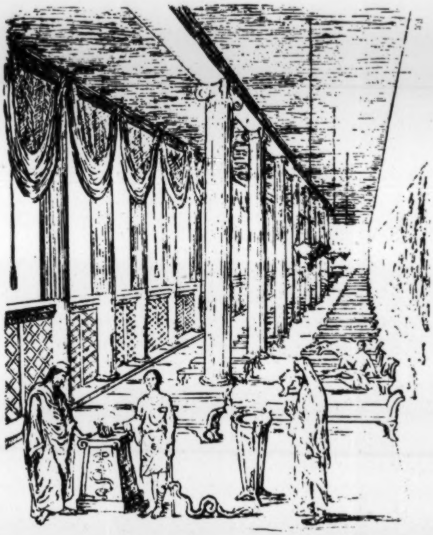


FIG. 7. RESTORATION OF INTERIOR OF ABATON AT EPIDAURUS. PATIENT SACRIFICING AND HAVING INJURED LEG LICKED BY SACRED SERPENT. (CATON.)

FIG. 8. ASCLEPIUS. FOURTH CENTURY, B. C. (BRITISH MUSEUM.)

Hippocrates lived in the midst of a great transitional epoch, when the faith of mankind was passing from polytheism to a belief in a single supreme intelligence. And he, it cannot be too deeply impressed upon us, was remarkably free from the popular superstitions of his age. In no portion of his works do we find him prescribing amulets and charms or other supernatural modes of cure; indeed, he has a hearty contempt of all the ostentatious practices of the charlatan. When rational means failed, he left the cure to deity and the *vis medicatrix naturae*, which force he ever recognized as *the* great physician. The legitimate province of his art he considered was merely to aid this innate power.

The human mind was struggling with phenomena it had not the power to analyze and it tried to express what was really beyond its reach. We must endeavor to see things as the Greek physician saw them.

It is the distinction of the Greeks alone, among the nations of antiquity, that they practiced a system of medicine based not on theory but on observation accumulated systematically as time went on. Only the Greeks among the ancients could look on their healers as "physicians" (Naturalist, *phucis*, nature) and that word stands as a lasting reminder of their achievement.

It is neither doctrines nor knowledge which raises the Hippocratic creed to the highest pinnacle of Greek medicine and even makes it a wellspring of medical science for all time; it is the conception of the medical vocation and the method of medical thought and action, true now as then.

The Hippocratic Collection is a library or rather the remains of a library. One might imagine it to have been the Library of the Hippocratic School at Cos, and that perhaps it contained the works of the greatest of the Asclepiads. While all the Hippocratic writings are anonymous, certain of the treatises are impressed with the marks of an outstanding genius who inherited much but bequeathed much more. At least one hundred years, if not probably three hundred, separate the writings of the earliest works from the writings of the latest, while there are other contents which are either in harmony with its doctrines or opposed to them which may be older or later than the nucleus. It is merely of antiquarian interest whether or not the shadowy Hippocrates of ancient tradition is really the writer. Suffice it that in the collection we obtain the picture of a man as well as the picture of a method.

The salient and important truth is that in the latter half of the fifth century the works were rewritten, probably by the same author, and in this revision was embodied a consistent doctrine of medical theory and practice free from both supersitition and philosophy and a rational empiricism of a strictly scientific character was set forth. The collection transformed and established the best tendencies in Greek medicine into something which has ever since been the admiration of doctors and scientific men; and the Hippocratic collection was the necessary and acknowledged foundation for the works of the greatest of modern clinical observers, Thomas Sydenham, while the teaching of Hippocrates and his school is the substantial basis of instruction in the wards of the modern hospital.

It was the fundamental principle of Hippocratic philosophy that an understanding of the body is impossible without an understanding of nature as a whole; in modern language, physiology is inseparable from physics and chemistry.

Hippocrates dealt not with fever of the colder climates of northern Europe, but with the remittent form of malaria common to hot climates. It is not too much to say that without keeping this fact in view we cannot understand a great part of the "Corpus." And it is interesting to note that Hippocrates was a medical textbook almost down to the time when malaria ceased to be a menace to the north of Europe, about 1850!

Hippocrates is no less entitled to

the distinction of the "Father of Surgery," than to the universal and undisputed rank of the "Father of Medicine." The surgical precepts and practice ascribed to him are but seldom alluded to by modern authors, and are, therefore, far less generally known to the profession of the present time. In the "Corpus" the purely surgical treatises will be found no less remarkable than those of clinical observation. These treatises vary in length and in completeness of finish. They embrace the consideration of many important subjects; and though not contributing a complete system of surgery, they nevertheless furnish us a very clear insight of the principles and practice of this science and art as it was understood twenty-three centuries ago. They are on things relating to the surgery: injuries of the head, fractures and dislocations, on the articulations, ulcers, fistulae, hemorrhoids, and contain also numerous surgical aphorisms.

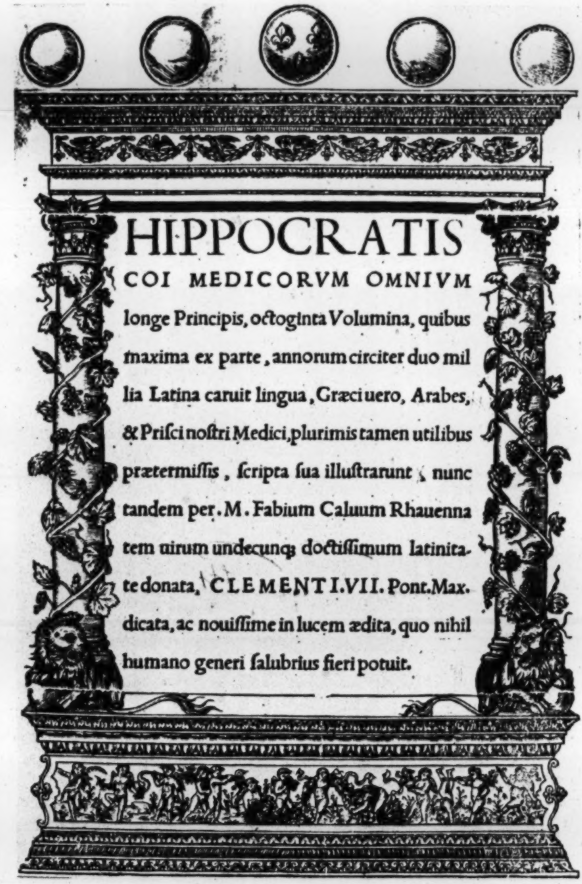
In that far-off age, surgery was practiced with remarkable skill and success. In the rough notebook "Concerning the Surgery," or the more elaborate treatise, "On the Physician," we may read minute directions for the preparation of the operating room and on such points as the management of light, both artificial and natural, scrupulous cleanliness of the hands, the care and use of the instruments, the decencies to be observed during the operation, the general methods of bandaging, the placing of the patient, the use and abuse of splints, and the need for tidiness, order and cleanliness.

Our grand master makes his pupils swear in the Oath not to perform lithotomy. This was doubtless due to the imperfect state of anatomical knowledge in that day and the general want of success which attended the performance of that operation. It was unquestionably a prudential and wise act of conservation on his part.

In reading his works we are impressed with the candor and honesty as well as the caution and practical experience of this grand old master. He illustrated his books on "Epidemics" with short histories of 42 individual cases, of which he frankly tells that 25 ended fatally, and but 17 in recovery.

The works are referred to by Aristotle and numerous other writers. They were first collected together about 300 B.C., soon after the opening of the Alexandrian library. The "Corpus" consisted of some seventy treatises, of which sixty-one are extant, but of which only a small portion are accepted as genuine. The entire collection has been subjected to the most searching scrutiny by numerous critics and commentators in both ancient and modern times, beginning with Herophilus (about 300 B.C.), and continuing down through the ages to Theophilus, who flourished in the seventh century of our era. Of the commentaries, that by Erotian, who lived during the reign of Nero, and one by Galen, who flourished in the latter part of the second century, A.D., are the most important. Since the seventh century, editions and commentaries have multiplied without number, and the works have been so highly valued that they have been translated into many languages.

It would appear that there was in Galen's day one text which was generally recognized to be authentic, which was the one usually copied and quoted, and from which the early editions were derived. The first printed edition, a folio in Latin translated directly from the Greek text, was published in Rome, by Franciscus Calvus, in 1525. Four other editions were published in the sixteenth century, at Basel, at Frankfort, and at Venice. The earliest Greek edition was published at Venice by Aldus (folio, 1526); this was soon followed by the much more accurate and complete folio of Froben (Basel, 1538).



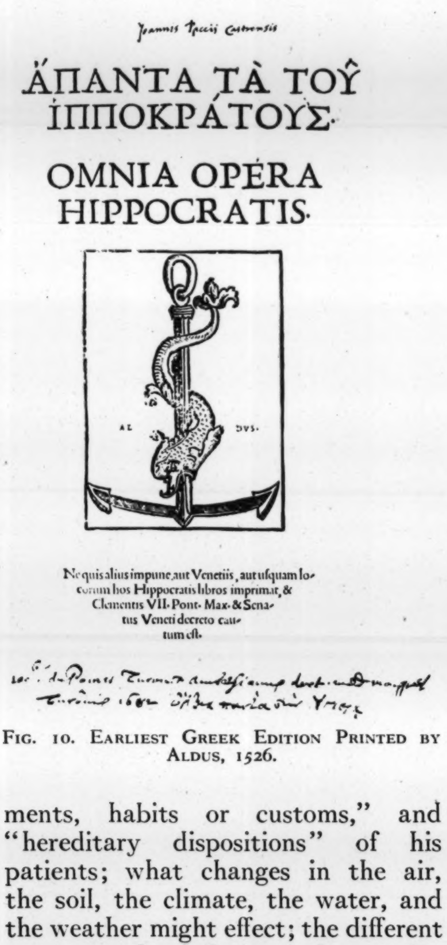
HIPPOCRATIS
COI MEDICORVM OMNIVM
longe Principis, octoginta Volumina, quibus
maxima ex parte, annorum circiter duo mil
lia Latina caruit lingua, Græci uero, Arabes,
& Priſci noſtri Medici, plurimis tamen utilibus
prætermiſſis, ſcripta ſua illuſtrarunt, nunc
tandem per. M. Fabium Caluum Rhauenna
tem uirum undecunq; doctiſſimum latinita-
te donata, CLEMENTI. VII. Pont. Max.
dicata, ac nouiſſime in lucem ædita, quo nihil
humano generi ſalubrius fieri potuit.

Fig. 9. Title Page, First Printed Edition.

Of the separate treatises the translations and editions are almost innumerable. Seventy-odd editions of the "Prognostics" are known, while of the "Aphorisms" not less than three hundred editions are said to exist.

"The Aphorisms of Hippocrates" is a compilation from various sources but a great part shows a close relation to the whole collection. The dates of nearly all the aphoristic writings in the collection may be placed between 450 and 400 perhaps completed by 415 B.C.

They are a compendium of all the Hippocratic writings, the result of a long-continued practice, grounded on experience, in considering the "different constitutions," "strength and imbecility," "sexes, ages, temperaments, habits or customs," and "hereditary dispositions" of his patients; what changes in the air, the soil, the climate, the water, and the weather might effect; the different seasons and exhalations; the popular diseases, the different symptoms, events and consequences; which of such signs tend to death, and which to recovery. The Hippocratic physician was not content to make only passive observations; he also took active measures to elicit the "physical signs." He, further, observed the pulse, still more the tongue, eyes and, besides, the secretions and excretions. Hippocrates was enabled to make such presages as astonished the people, who looked upon him as upon an oracle. Yet in acute diseases he confessed that predictions were not altogether so certain. In modern times a large, perhaps the chief, task of the student of medicine is to acquire a knowledge of these so-called physical signs of disease, the tradition of which has been gradually rebuilt during the last three centuries. Medical men clamored for facts and still more facts and yet they found the "Aphorisms," purged of all mysticism and obscurity, a most convenient means of expressing their thoughts, and the "aphorisms" became to them an ideal vehicle for generalized fact.



Joannis [illegible] Castrensis

ἍΠΑΝΤΑ ΤᾺ ΤΟΥ͂
ἹΠΠΟΚΡΆΤΟΥΣ·

OMNIA OPERA
HIPPOCRATIS·

Ne quis alius impune, aut Venetiis, aut uſquam lo-
corum hos Hippocratis libros imprimat, &
Clementis VII· Pont· Max· & Sena-
tus Veneti decreto cau-
tum eſt.

FIG. 10. EARLIEST GREEK EDITION PRINTED BY ALDUS, 1526.

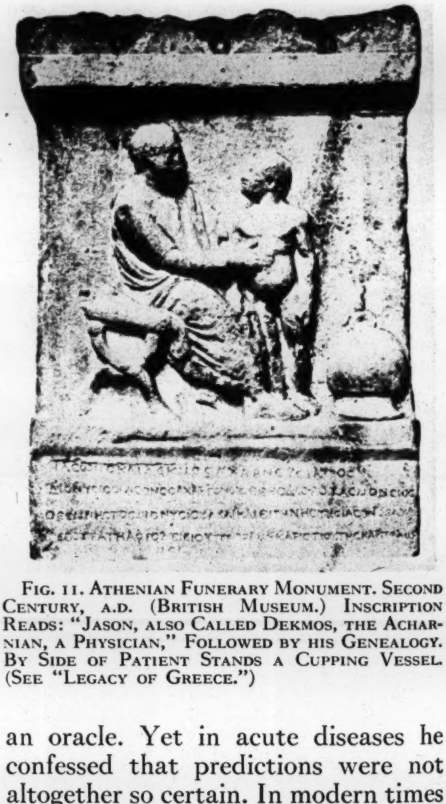


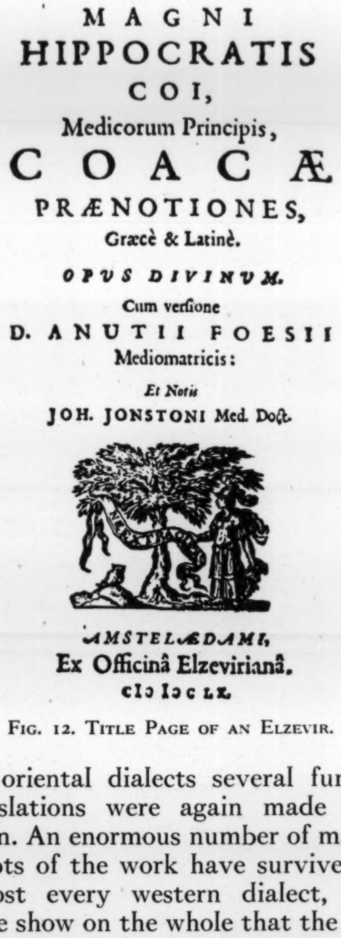
FIG. 11. ATHENIAN FUNERARY MONUMENT. SECOND CENTURY, A.D. (BRITISH MUSEUM.) INSCRIPTION READS: "JASON, ALSO CALLED DEKMOS, THE ACHARNIAN, A PHYSICIAN," FOLLOWED BY HIS GENEALOGY. BY SIDE OF PATIENT STANDS A CUPPING VESSEL. (SEE "LEGACY OF GREECE.")

It has often been said that

aphorisms belong to pre-scientific days; that proverbs, and similar pithy remarks, embody experience collected and generalized, indeed, but not yet reduced to a science. Such a remark is true of most aphorisms and of eastern thought generally, but it needs much modification when we discuss their use in Greek scientific literature. They served probably as a working hypothesis, and became a common medium of medical thought in the fifth century, but were but rarely employed later.

The aphoristic style was adopted, probably, by some early Greek philosophers because it arrested the attention and assisted the memory, thus manifesting its singular fitness to express scientific thought during the stages of its development. A love of fact, apart from speculation, seems materially to express itself in aphoristic language.

The "Book of the Aphorisms" served as "heads of discourse" for lectures, and, as a cram-book for students. It was very early translated into Latin, probably before and certainly not later than the sixth century of the Christian era, and thus became accessible throughout the West. Manuscripts of this Latin version dating from the ninth and tenth centuries have survived in the actual places in which they were written, at Monte Cassino, in southern Italy, and at Einsiedeln, in Switzerland. In 991, the book was well known and closely studied at the Cathedral School of Chartres. From France the "Aphorisms" reached England and they are mentioned in documents of the tenth or eleventh century. By then, too, the book had been translated into Syriac, and later into Arabic and Hebrew, so that in the true medieval period it was known both East and West, and in the vernacular as well as the classical tongues. From the oriental dialects several further translations were again made into Latin. An enormous number of manuscripts of the work have survived in almost every western dialect, and these show on the whole that the text has been tampered with surprisingly little.



MAGNI
HIPPOCRATIS
COI,
Medicorum Principis,
COACÆ
PRÆNOTIONES,
Græcè & Latinè.
OPVS DIVINVM.
Cum verſione
D. ANUTII FOESII
Mediomatricis:
Et Notis
JOH. JONSTONI Med. Doct.

AMSTELÆDAMI,
Ex Officinâ Elzevirianâ.
CIƆ IƆ C LX.

FIG. 12. TITLE PAGE OF AN ELZEVIR.

The "Aphorisms" must have been useful to everyone who practiced "physick" up to the nineteenth century for from Hippocrates' time until then they kept their reputation and they will preserve it as long as human creatures remain.

Such, then, is a brief outline of a work which may be confidently pronounced to be one of the most remarkable in the whole compass of medical literature.

To any one who wishes to have his mind embued with the enduring principles which have formed the ground work of medical theory and practice in the course of the last twenty-four centuries it may be safely recommended that he give his days and nights to the study of the "Aphorisms of Hippocrates!"

My own treasured volume is a Latin translation. The title page reads:

Hippocrates / Coi / Aphorismi / Ex Interpretatione / Joannis Heurnii / Ultrajectini / Ingolstadii. Typis Ostermayrianis / Anno M. DC. LXXX.

It consists of 173 pages and twenty pages of Index. The name of the first owner, perhaps, is inscribed on the title-page, with the date, 1681. It is bound in thin boards covered with pigskin, and clasped by a pin and a small skin strap, on which is a small brass eyelet.

Its height is $2\frac{10}{16}$ inches; width $1\frac{7}{16}$ inches and thickness $\frac{10}{16}$ inch.

The board is worn bare of the skin, evidently by the thumb of the owner as he carried it into and out of his pocket.

I trust I may be permitted to recite a few quotations from this wonderful book of the "Aphorisms." The text employed has been that of Heurne, the translation being the most literal and simple I could find in the College's collection.

Jan Van Heurne was born at Utrecht in 1543, and received his M.D. at Padua. He later became professor of medicine at Leyden. He was the first to introduce the true clinical method of teaching. On the Continent it was taught only by Sylvius. The usual method was to read off a perfunctory lecture in Latin followed by a number of prescriptions of great complexity and prescribed to conform to the ideas concerning the physiologic bases as to disease prevailing at that day. All of which the student was to copy and memorize.

Heurne's editions of the "Aphorisms" long enjoyed a great popularity.

It is impossible to make an anthology that would be satisfying. One must read the whole book many times over: at each reading one finds new interests and wonders in the sections.

Section 1. 1. Life is short, art long, occasion brief, experience fallacious, judgment difficult. It is requisite that the physician exhibit what is essential, and that the patient, attendants, and all which surrounds him, concur therein.

Necessary considerations, to a practical physician! In this one memorable paragraph, so condensed in the original as to be almost untranslatable, he who "first separated medicine from philosophy" puts aside at once all speculative interest while in the actual presence of the sick. His whole energy is concentrated on the case in hand with that peculiar attitude, at once impersonal and intensely personal, that has since been the mark of the physician, and that has made of medicine both a science and an art.

1. 6. The greater the evil, the more vigorous the remedy.

8. When the disease attains most vigor, then it is that the severest regimen is required.

13. Old men bear abstinence best; next, those who have attained their climacteric; adolescence, less; and infancy, least; but of all these, the vivacious support it most easily.

14. The growing body has most of innate heat, and, therefore, requires most aliment; otherwise the constitution suffers. Old men have less heat and, therefore, need less food. An over quantity would injure them. It therefore follows that fevers have not that acute tendency with the aged which they have with the youthful; with the former the body is cold.

Section II relates to sleep and disorders of diet:

1. In disease, a laborious sleep presages great danger; but if the slumber be refreshing, it is favorable.
2. When sleep soothes delirium, it betokens well.
4. Neither hunger nor satiety, nor any excess which oversteps the bounds of nature can be beneficial.
5. Spontaneous lassitude foreshows disease.
6. Whosoever hath pain in any part of his body, without being sensible thereof, is diseased in mind.
11. Liquids replete more easily than solids.
16. During hunger, labor is injurious.
19. In acute diseases, predictions of death or recovery are not always unerring.
21. A potion of wine allays hunger.
31. If the convalescent gain not strength, notwithstanding that he eats well, it shows unfavorably.
38. Those aliments which are grateful, although somewhat objectionable, are to be preferred to those which are more wholesome, yet less grateful.
39. The aged are, for the most part, less disposed to fall into disease than the young; but with them, protracted diseases generally prove fatal.
49. The aged, and even the weak, who are inured to labor, bear it more easily than the young and robust who are not habituated to it.

Here we have a group of observations, some of which have become literally household words, nor is it difficult to understand how such sayings have passed from professional into lay keeping.

The book also contains a number of notes on rare conditions seldom seen or noted save by medical men. Such are the following very acute observations:

Section V.

2. Convulsion, arising from a wound, is fatal.
3. Convulsion, or hiccough, proceeding from hemorrhage, is dangerous.
6. Those who are seized with tetanus expire within four days; but if they survive the fourth day, they generally recover.
66. If in large and bad conditioned wounds, tumefaction does not take place, the danger is considerable.

These four sentences all concern wounds. The first and third refer to the disease tetanus, which is very liable to supervene on wounds fouled with earth, especially in hot and moist localities, The disease is characterized by a series of painful muscular contractions which in the more severe and fatal form may become a continuous spasm, a type that is referred to in the first sentence. It is true of tetanus that the later the onset after the wound is sustained the better the chance of recovery. This is brought out by the third sentence. The second and fourth sentences record untoward symptoms following a severe wound, now well recognized and watched for by every surgeon. There were, of course, innumerable illustrations of the truth of these aphorisms in extensive wounds, especially those involving crushed limbs, in the late War.

v. 9. Phthisis manifests itself, for the most part, from the eighteenth to the thirty-fifth year.
14. In phthisis, diarrhea proves fatal.

The period given by the "Aphorisms" for the maximum frequency of onset of the disease is closely borne out by modern observations. The second aphorism is equally valid; continued diarrhea is a very frequent antecedent of the fatal event in chronic phthisis, and postmortem examination has shown that secondary involvement of the bowel is an exceedingly common condition in this disease.

Section VI.
42. The induration of the liver, in jaundice, is unfavorable.

No less remarkable is the above saying: jaundice is a common and comparatively trivial symptom following or accompanying a large variety of diseases. In and by itself it is of little importance and almost always disappears spontaneously. There is a small group of pathological conditions, however, in which this is not the case. The commonest and most important of these are the fatal affections of cirrhosis and cancer of the liver in which that organ may be felt to be enlarged and hardened. If, therefore, the liver can be so felt in a case of jaundice, it is, as the aphorism says, of gravest import. Representations of such cases have actually come down to us from the Greek times. Thus on a monument erected at Athens to the memory of a physician who died in the second century of the Christian era we may see the process of clinical examination. The physican is palpating the liver of a dwarfish figure whose swollen belly, wasted limbs and anxious look tell of some such condition as that described in the aphorism. The ridge caused by the enlarged liver can be detected on the statue. (Fig. 11.)

Section II.
52. Everything which is judicious being done, without success, we are not, therefore, to recede from our plan, while we still entertain the same views as we did at first.

Section III. Seasonal Effects.
16. The diseases which attend on excessive rains, are, for the most part, protracted fever, diarrhea, putrefaction, epilepsy, apoplexy and angina; those which arise from long droughts, are tabes, ophthalmia, gout, dysuria and dysentery.
18. In the succession of seasons the spring and the beginning of summer are generally favorable to children, and those approximating to youth, who then enjoy excellent health. The summer and early part of autumn agree well with the aged; but with those of a middle age, the winter and latter part of autumn appear to suit best.

Hippocrates having done with the seasons comes now to the several ages, and begins with infants to show the diseases to which every age is subject.

Section IV.
Purgatives
Fluxes
Sweats: critical days: 3rd, 5th, 7th, 9th, 11th, 14th, 17th, 21st, 27th, 31st, and 34th
Fevers: intermission
Urines

Section V.
Consumptives
Convulsions

Hot and cold baths
Hot and cold drinks
Pregnancy, aromatics, purges, acute diseases
Menstrual

Section VI.
Dysenteries
Pains
Ulcers, treatment
Hemorrhoids
Looseness
Melancholy

17. Diarrhea supervening in ophthalmia is beneficial.
Wounds
Extravasated blood

21. When varices or hemorrhoids supervene in mania, the disorder ceases.

28. Eunuchs never suffer from podagrical affections, or become bald.

30. Gout does not appear in adolescence, previous to venery.

31. Pains of the eyes are relieved by pure wine, bathing, fomentation, venesections and purging.

53. Delirium, accompanied with laughter, is less dangerous.

57. Apoplexy is most prevalent from the fortieth to the sixtieth year.

Sections VII and VIII have always been regarded as spurious by some commentators while others accept them as genuine; they at least maintain the spirit of the accepted sections.

Section VII.
Deliriums and Phrensies, Convulsions, Spitting of Corruptions.

18. Convulsion, or delirium, arising from vigilancy, is dangerous.
Urinary.

43. Women are never ambidextrous.

This is said of women of a "tender disposition," and that live a lazy life; nevertheless, if they make much use of their hands I see no reason why they may not be as ambidextrous as men.

46. In pains of the eyes, after having prescribed the use of good wine, and of frequent warm collyria, we are to bleed. [The way to cure pains of the eyes, which proceeds from drinking strong wine and bathing in hot water, is by phlebotomy. Phlebotomy is the quickest remedy for any pains that proceed from an inflammation and expansion of the blood vessels in whatsoever part.]

51. Sternutation proceeds either from calefaction or humidity of the brain; for the superfluous air within the cavity of the head is thereby effused; and the noise it makes in issuing arises from the narrowness of the passage.

56. Anxiety, oscitation and horrors are relieved by potations of wine and water, in equal quantities.

Section VIII.

1. Phrenitis, occurring after the fortieth year, is incurable. The danger is less, in proportion as the disease accords with the constitution and age of the patient.

2. With those laboring under disease, tears, either as they flow voluntarily or involuntarily, give a favorable or unfavorable indication

3. In those suffering under quartan fever hemorrhage from the nose is an unfavorable symptom.

4. Sudden and violent sweats which break forth on critical days are dangerous, as also those which come out on the forehead in large salient drops, likewise those which are cold and abundant, for such excretions are the effect of long, repeated and violent internal action.

6. That which medicine does not effect, the knife frequently effects; and what the knife does not effect, the actual cautery often effects; but when all these fail, the disease is incurable.

15. The patient falling into vertigo, attended with an obscurity of

vision, an aversion to light, and comatose sleep—fatal.

16. Delirium, attended with transports of rage, in which the patient has neither a sense of hearing nor seeing, nor a consciousness of what takes place about him, are symptoms of approaching dissolution.
17. To these premonitory symptoms of death succeed an elevation and turgescence of the abdomen.
18. The closing scene at length arrives, when the heat of the soul, placed near the umbilicus, ascends above the diaphragm, and the humors of the body are entirely dissipated. It is then that the lungs and pulse lose their humidity, that the heat locally concentrates itself previous to its final extinction, and that the spirit of heat, of which all things consist, leaves its tenement forever. Lastly, the soul, partly by the pores of the skin, partly by the orifices of the head, which have served the various purposes of life, leaves its earthly tabernacle and abandons the cold and inanimate image of man, now wholly made up of bile, of blood, of serum, and of flesh. [Hippocrates thought the soul to be a fire, a kind of heat which evaporated through the pores of the body.]

Section VI.

52. It is particularly necessary, in disease, to observe the appearance of the eyes during sleep; if the eyelids be imperfectly closed, so that some of the white is observable [the patient not being then, under the operation of purgatives, or existing diarrhea] the symptom is very unfavorable, and frequently fatal.

In this, the last aphorism which I shall quote, we see the Hippocratic physician actually making his observations. Now during sleep the eyeball is turned upward, so that if the eye be then opened and examined only the white is seen. In the later stages of all wasting and chronic diseases the eyelids tend not to be closed during sleep. Such patients, as is well known, often die with the eyes open and, sometimes, exhibiting only the whites.

What would be the emotions of the great physician of Cos were he to return to earth and be informed of the reputation of the works imputed to him, the universal admiration of his genius, and the homage paid to his immortal fame by successive generations of men through the long period of twenty-three centuries! No wonder that he is regarded as the "Father of Medicine," and that he has been styled the "Divine Hippocrates!"

Note: Nothing in this address is offered as original matter, not even as to composition; at best, it is but a compilation, an expression of what the author deemed useful from what he gathered from a number of the works in the Library of the College of Physicians, Philadelphia. The extracts have been incorporated without acknowledgement of their sources. The College possesses a highly valuable collection of Hippocratean works, from huge folios of the famous and now rare first editions, to precious small volumes, exquisite gems of the printers' art and the binders' craftmanship. Not the least item to be noticed in the inspection of this collection is the record of the names of those to whom these books were treasured possesssions. For the general reader the most useful edition is that published in the Loeb Classical Library, which has reached the third volume; the fourth, containing the Aphorisms, has not yet been issued.

THE HISTORY OF TAKING THE BLOOD PRESSURE

By RALPH H. MAJOR, M.D.

KANSAS CITY, MO.

FEW discoveries in medicine have, to employ a somewhat overworked analogy, sprung like Minerva completely armed from the head of Jupiter. The history of the discovery of that universally employed instrument, the sphygmomanometer, is no exception and as we trace its history from its earliest discovery to its present state of perfection we find that more than one hundred and fifty years have passed. And perhaps we should even now employ such a term as "present state of perfection" with caution since there are many voices willing to proclaim that our Minerva, even after two hundred and twenty-one years, is not yet completely armed.

Johannes Müller once wrote that "the discovery of the blood pressure was more important than the discovery of the blood." Whether we agree with such a striking statement or not it is noteworthy that one of the greatest physiologists of all times ranks the labors of a comparatively unknown English clergyman with the discovery of the immortal Harvey.

The name of the Rev. Stephen Hales, the discoverer of the blood-pressure, does not figure very largely in the ecclestiastical literature of his day or of succeeding generations. The student of church history in the eighteenth century will find the names of Bishop Butler, of Bishop Berkeley and of John Wesley almost upon every page, but will look in vain for the name of the perpetual curate of Teddington. Hales, however, has received his due from other hands than that of the Church historian, for almost every textbook of physiology begins its chapter on circulation with an account of his labors. And he has perhaps a more lasting fame, since succeeding generations show less and less taste for theological controversies and give more and more honor to the discoverers of facts.

This does not mean that Hales died unknown or unhonored. The Royal Society early made him a Fellow and in 1739 awarded him the Copley medal. Further scientific recognition came to him from abroad, for in 1753, on the death of Sir Hans Sloane, he was chosen foreign associate of the French Academy of Sciences. A man to have succeeded Sir Hans, who was the first physician to receive an hereditary title, president of the College of Physicians for sixteen years, president of the Royal Society for thirteen years in succession to Sir Isaac Newton, and whose private collection became the nucleus of the British Museum, must have enjoyed a considerable reputation among his confreres.

Stephen Hales the discoverer of the blood-pressure, in his "Statical Essays" published in 1733, records his first observations on blood-pressure which, as he says, were performed "about twenty-five years since" in 1708. These experiments were performed on the crural arteries of dogs and, as he states, "about six years afterwards I repeated the like Experiments on two horses, and a fallow Doe." His first experiment on horses, he describes as follows:

In December I caused a mare to be tied down alive on her back; she was fourteen hands high, and about fourteen years of age, had a Fistula on her Withers, was neither very lean, nor yet lusty: Having laid open the left crural Artery about three inches from her belly, I inserted into it a brass Pipe, whose bore was one-sixth of an inch in diameter; and to that, by means of another brass Pipe which was fitly adapted to it, I fixed a glass Tube of nearly the same diameter, which was nine feet in Length; Then untying the Ligature on the Artery, the blood rose in the Tube eight feet three inches perpendicular above the level of the left Ventricle of the heart.

FIG. 1. REV. STEPHEN HALES.

Hales states that after these experiments he "did not then pursue the Matter any further, being discouraged by the Disagreeableness of Anatomical Dissections." Later however, he "was encouraged to resume the inquiry, by Variety of such experiments as I conjectured would give some Light into the Matter."

Hales' experiments were carried out, of course, without the use of anesthetics and more than a century before Long and Morton's discovery of anesthesia. It would be rather interesting to speculate just what would have happened to him had the Anti-Vivisection Society been in existence at that time. Would his Lord Bishop have asked him to desist from such practices or would he have thrown himself upon the protection of King George III to whom his work was dedicated? Surely the King could not have failed him if he had read the dedication which stated that "Your Majesty's subjects of Great Britain are allowed, by the candid confession of other nations, to excel in experimental philosophy which has long been found to be most beneficial to mankind" and closed with the pious wish "that your Majesty, after having long continued a blessing to your subjects in a prosperous reign here on earth may hereafter enjoy immortality in heaven."

The later experiments carried out

by Hales represent pioneer attempts to solve problems that are still the subject of physiological investigation. He studied the capacity of the ventricles, the velocity of the blood in the aorta, the resistance to the arterial capillaries, the strength of arterial and venous walls and many other related questions. He found that compression of the abdomen increased the arterial pressure, that the lumen of blood vessels was constricted by cold solutions and that "such things as constringe the Vessels increase the Force of the arterial Blood" and that conversely warm water dilated the blood vessels.

Hales' work represents an extremely important contribution to the study of the circulation. Harvey, in the previous century, had discovered the circulation of the blood, although one link in his chain of proof was lacking: the capillaries, and had appreciated the rôle played by the contraction of the heart. Hales added to these observations for he not only discovered the blood-pressure but also pointed out the important rôle played by the peripheral vessels in the maintenance of the blood-pressure. Hales conceptions of physiology, the problems to be solved and the methods of solving them, stamp his as a very unusual mind. His methods of work and his vision are essentially modern, and he seems unusually free from the rather vague speculations that formed so much of the mental equipment of most of his predecessors and contemporaries. Hales shows the true scientific temperament when he says:

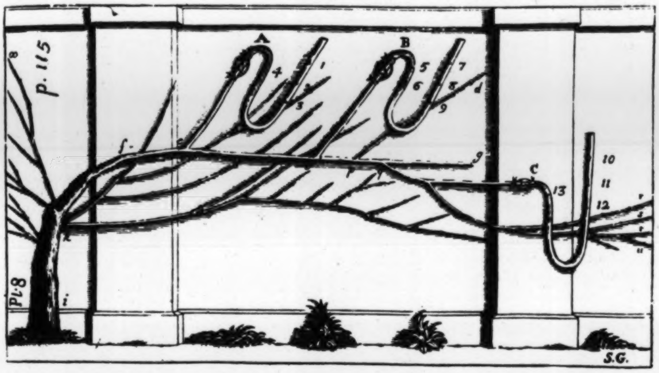


FIG. 2. HALES' "MERCURIAL GAGE" WHICH MEASURED FORCE OF RISING SAP.

> "We must be content in this our infant state of knowledge, while we know in part only, to imitate children, who for want of better skill and abilities, and of more proper materials, amuse themselves with slight buildings . . . In the mean time it would but ill become us in this, our state of uncertainty, to treat the errors and mistakes of others with scorn and contempt, when we cannot but be conscious, that we ourselves see things *but as through a glass darkly*, and are very far from any pretensions to infallibility."

Hales' "Statical Essays" unfortunately contains no illustrations of his experiments upon the blood-pressure of animals. The book does, however, show an interesting illustration of his ingenious experiment in estimating the pressure of the sap in a growing vine using "mercurial gages, . . . which force of the rising sap is near five times greater than the force of the blood in the great crural artery of the horse.”

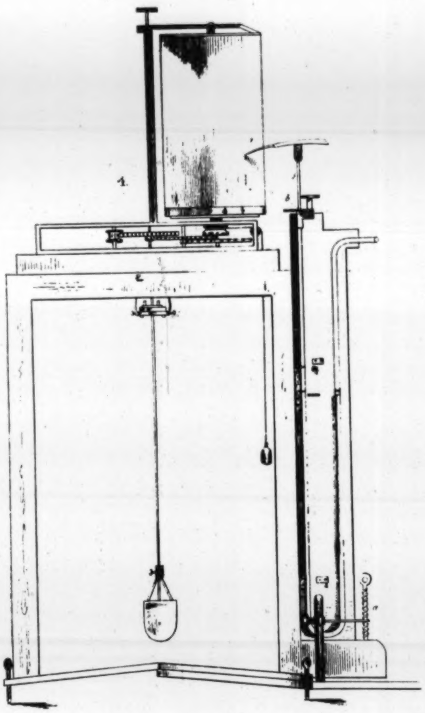


Fig. 3. Ludwig’s Kymograph.

The next important advance in the study of the circulation came in the following century when Jean-Leonard-Marie Poiseuille, a young French medical student, described his “hemodynamometer” in his graduating dissertation of 1828. Poiseuille repeated some of Hales blood-pressure experiments but improved the apparatus by substituting a mercury manometer for the long glass tube, connection with the artery being made by a hollow lead tip filled with potassium carbonate to prevent coagulation. With this instrument he showed that the blood-pressure rises and falls on expiration and inspiration and he measured the degree of arterial dilatation produced by each heart beat.

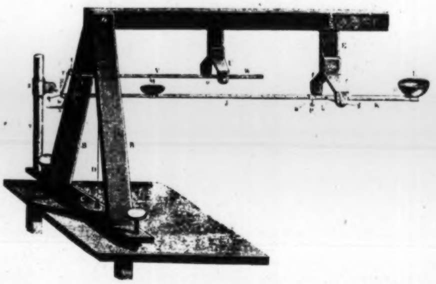


Fig. 4. Vierordt’s Sphygmograph. The Small Pad (f) Was Placed Over Radial Pulse, Marker (x) Wrote on a Revolving Drum. By Moving the Pan (m) Different Degrees of Pressure Could Be Placed on the Pulse Until It Was Obliterated.

To this instrument of Poiseuille, Carl Ludwig in 1847 added a float and “had the genius to cause this float to write on a recording cylinder, and thus at one coup gave us the kymograph, or wave-writer, and the application of the graphic method to physiology.” (Stirling.)

Although physiology was equipped in 1847, thanks to Ludwig’s discovery with an apparatus for determining the blood-pressure in animals, an apparatus that has undergone little modification or improvement since, yet clinical medicine had to wait many years before methods were devised permitting blood-pressure determinations with any degree of accuracy in human patients. It could also be added that forty years of constant effort at improvement have not yet brought the clinical instruments up to the same standard of efficiency as that obtained by Ludwig’s laboratory instrument.

The first accurate estimation of the blood-pressure in man was made by Faivre, in 1856, who in the course of an operation connected the artery with a mercury manometer and made direct readings. He found the blood-pressure in the femoral artery to be 120 mm. of mercury and the pressure in the brachial artery to vary between 115 and 120 mm. At a much later date, Albert, using the same method, studied a series of patients undergoing amputation at the knee and found the blood-pressure in different individuals to vary from 100 to 160 mm. Otfried Müller and Blanel, Dehon Dubus and Heitz record similar observations.

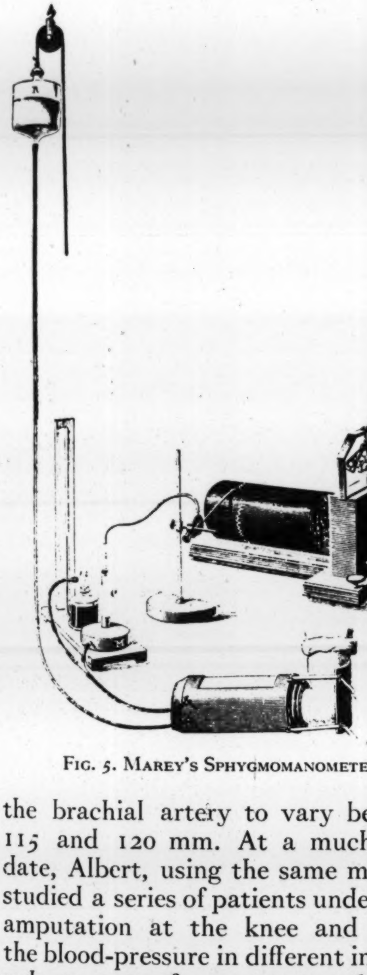


FIG. 5. MAREY'S SPHYGMOMANOMETER.

These direct observations of the blood-pressure were of great value since they established normal values and also stimulated investigators to search for simpler and more practical methods. In patients obviously no methods of blood-pressure determination necessitating direct connection between an artery and a manometer could have any widespread application or be of any great clinical value. The approach to a solution of this problem lay obviously along other lines.

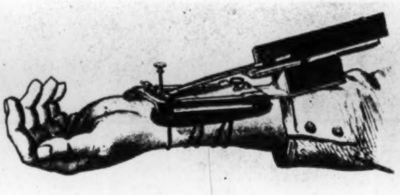


FIG. 6. MAREY'S SPHYGMOGRAPH.

Karl Vierordt, professor of physiology at Tübingen, who introduced into medicine the graphic method of registering the pulse, also indicated the method by which the problem of estimating the blood-pressure in man might be solved when he formulated the principle in 1855 that the indirect estimation of the blood-pressure could be accomplished by means of measuring the counterpressure necessary to obliterate the pulsation in the artery. Vierordt attempted, but with rather indifferent success, to measure the pressure necessary to obliterate the radial pulse by a weight attached to the lever of a sphygmograph. His rather complicated ap-

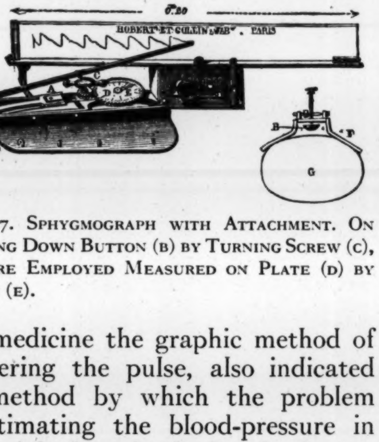


FIG. 7. SPHYGMOGRAPH WITH ATTACHMENT. ON SCREWING DOWN BUTTON (B) BY TURNING SCREW (C), PRESSURE EMPLOYED MEASURED ON PLATE (D) BY NEEDLE (E).

paratus shown in Figure 4 is the direct ancestor of the present-day sphygmograph.

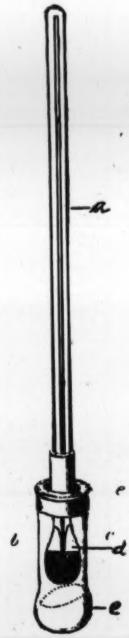


Fig. 8. Sphygmomanometer of von Basch. Pressure on Bulb (e) is Transmitted to Bulb (d) Filled with Mercury. Mercury Is Forced Up to Tube (a) and Its Height Registered.

Marey, who improved Vierordt's method of registering the pulse and introduced it into clinical medicine, turned his attention next to the problem of estimating the blood-pressure in patients. He devised the apparatus shown in Figure 5. The principle employed in this apparatus was that enunciated by Vierordt. The arm was placed in a glass box filled with water and connected with Marey's sphygmograph with a recording drum which registered the arterial pulsations in the arm. The glass box was also connected with a mercury manometer and with a leveling bulb by means of which the pressure within the box could be raised or lowered. Marey made his estimations of blood-pressure by noting first the pressure recorded by the manometer at which the greatest excursions of the sphygmographic tracings occurred and then, gradually increasing the pressure by raising the leveling bulb, he noted the pressure at which excursions of the indicator ceased. This pressure he regarded as the systolic pressure.

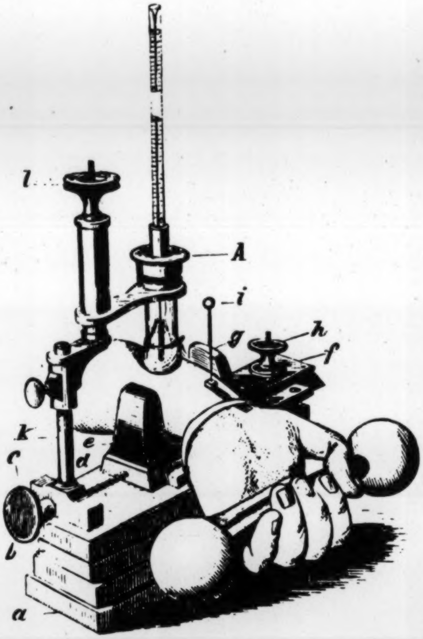


Fig. 9. More Complicated Model of von Basch's Sphygmomanometer.

Marey's apparatus was very ingenious but too cumbersome and complicated for clinical use. It also contained an obvious source of error since the pressure necessary to cause the disappearance of the pulse exerted itself not only upon the blood-vessel wall but upon the soft parts of the arm as well.

Meanwhile, Marey's sphygmograph was becoming more and more employed in the clinic and several observers attempted to estimate the blood-pressure with it. The method employed was to attach a weight to the spring of the manometer and the blood-pressure was estimated by the weight required to compress the artery. Observations by this method were made by Foster, Béhier Landois and Potain, the last observer pointing out that it gave a very imperfect estimate of the blood-pressure. According to Potain, the force that raises the spring depends upon two factors, the pressure of the blood and the surface of the vessel wall, the latter being very variable and interfering with accurate readings. Potain concludes that the spring instruments should not be employed in the estimation of blood-pressure.

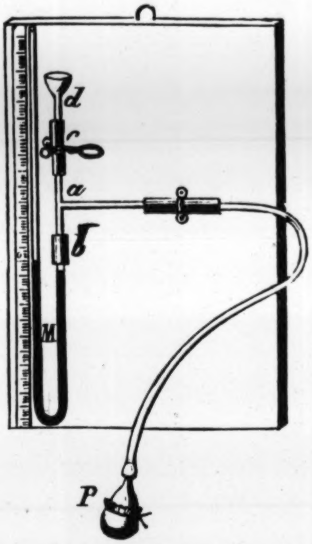


Fig. 10. Sphygmomanometer of Zadek. (p) Bulb. (m) Mercury Manometer. (p) Applied to Radial Artery with Sufficient Pressure to Obliterate Pulse. Pressure Necessary Read on Mercury Manometer and Considered Systolic Pressure.

The first accurate and practical instrument for the estimation of the blood-pressure in patients was devised by von Basch in 1880. Von Basch's method consisted of obliterating the arterial pulse by means of a ball filled with water and measuring the pressure within the ball at the moment the pulsations disappear. Zadek by means of a slight modification of this method tested it on dogs in whom direct manometric estimations of the carotid pressure were being carried out and found substantial agreement between the two methods.

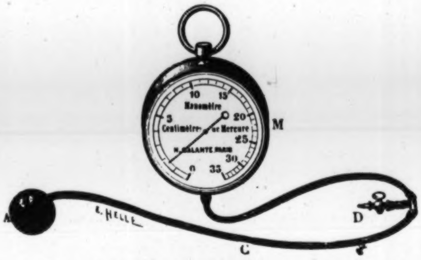


Fig. 11. Potain's Sphygmomanometer.

Both of these observers found the average normal pressure in man to be 130 mm. of mercury with variations between 110 mm. and 160 mm. They also noted that some patients with marked arteriosclerosis had a blood-pressure of 180 mm. to 200 mm. and that some patients with fever showed blood-pressures as low as 90 or 100 mm. Their initial observations on the height of the blood pressure in various diseases have been confirmed by every physician who has ever made blood-pressure estimations and indicate that in their hands the method of von Basch was an accurate one.

The introduction of von Basch's instrument into clinical medicine was not, however, greeted with unanimous approbation by the medical profession. Like many other new inventions, this instrument and its successors had scorn and ridicule heaped upon it. The *British Medical Journal* rebuked those advocating the use of the sphygmomanometer saying that by such methods "we pauperize our senses and weaken clinical acuity."

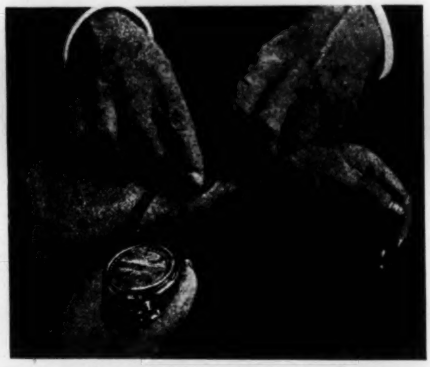


Fig. 12. Application of Potain's Sphygmomanometer.

The instrument of von Basch was greatly improved by Potain who devised a simple portable sphygmomanometer which, as Vaquez remarks, "for an entire medical generation was as useful in research as the clinical thermometer." Potain's sphygmomanometer, shown in Figure 11, consists simply of a ball filled with air and attached to an aneroid manometer. In taking the pressure, the bulb is pressed down gradually until the palpating finger over the radial pulse no longer feels any beats and the pressure necessary to obliterate the pulsations is read on the manometer, this figure corresponding to the systolic pressure.

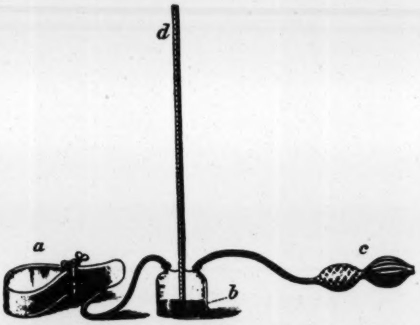


Fig. 13. Sphygmomanometer of Riva-Rocci.

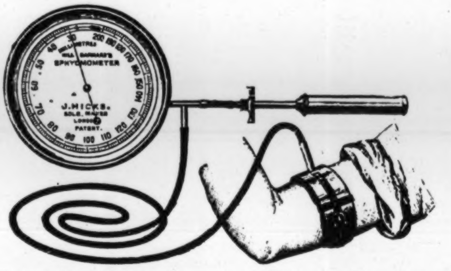


Fig. 14. Sphygmomanometer of Hill and Brainard.

In 1896 Riva-Rocci at the Italian Congress of Medicine demonstrated a new apparatus for the estimation of the blood-pressure. Riva-Rocci's apparatus consisted of a rubber bag surrounded by a cuff of inelastic material and connected with a mercury manometer and a rubber bulb. In taking the blood-pressure, the cuff with the rubber bag was placed around the arm, air pumped into the bag by means of the bulb and the pressure raised until the radial pulse disappeared at the wrist. The air was then released and as the mercury in the manometer slowly fell, the point on the scale was noted at which the radial pulse reappeared and this reading taken as the systolic pressure. The following year Hill and Barnard described an apparatus very similar to that of Riva-Rocci but differing in that it employed a pressure gauge instead of a mercury manometer.

The apparatus of Riva-Rocci marks the end of the search for a simple clinical method of estimating the blood-pressure, and it was the logical and progressive outcome of the work initiated by Stephen Hales one hundred and eighty-eight years previously. Many modifications, new sphygmomanometers, new methods of estimation have been proposed from time to time, but the apparatus of Riva-Rocci or some slight modification of it has been practically universally employed for the past thirty years and it continues to be the best instrument of its type, the most accurate and simple clinical instrument for the estimation of the blood-pressure.

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LAZZARO SPALLANZANI
(1729-1799)

By PROF. GUISEPPE FRANCHINI

BOLOGNA, ITALY

IN the worthy quest for vindicating natural virtues, it is a source of great joy to turn our thoughts to those eminent investigators of mysterious phenomena which have arisen through the dark periods of the past. To bring those names to light, and to perpetuate their memory is their fitting tribute and our just duty.

The theologian, Lazzaro Spallanzani, stands a dominant figure as a man of letters, as a naturalist, physicist, chemist, geologist, volcanologist and physiologist, and the light he shed over the hidden paths of science led to the glory reaped by Pasteur. His epoch was one of fruitful investigation, when scientists vied with one another in the field of experimentation. It was the age of Scarpa, Volta, Vesalius, Breislak, Réaumur, Buffon, Lavoisier, Condorcet, Vicq d'Azir, Cuvier, Lagrange, Laplace, Laland, Haller, Bonnet, Needham, Hunter and many others.

Spallanzani's earlier preceptors were learned Jesuits and Dominican monks, custodians of moral and theological philosophy. Later, though still a youth and keenly interested in natural history, he came under the influence of his cousin Lauro Bassi, an eminent experimental physicist. Doctor Bianconi taught him the beauties of the classics; he was able to discourse most learnedly on the difficult and ambiguous passages from Homer and Demosthenes, the two Greek literary giants then in vogue; he developed an unimpeachable Latin and French style.

His father, practicing law in his native Scandiano, longed to see his son an able barrister; but Spallanzani early evinced a lack of enthusiasm for his legal studies, and gradually drifted away to the more enticing fields of science and mathematics. Already a priest at the age of twenty-six, he was made professor at the College of Reggio Emilia, where he remained six years, and there began his experimental work which later culminated in so many brilliant discoveries. The microscope was his constant guide, and with it he was able to see vistas hitherto unknown to man. As the Apennines disclosed to him the secrets of the torrential waters bubbling from hidden mountain sources ("De lapidibus ab aqua resilientibus," Dissertation, dedicated to Lauro Bassi), so the microscope revealed to him the mysteries of the infusoria which he observed with a keen and penetrating eye. This discovery gave Spallanzani a European reputation, and he was invited to the various universities as far north as Saint Petersburg. But his goal was the great seat of learning at Pavia; and there in that historic city, he was given a professorial chair, where he continued with his investigations on the infusoria, on animal reproduction, on the nemosperm, on the secrets of the digestive function, on the propagation of species, and on artificial fecundation. In this work, he antedated the Englishman Hewson, whose work appeared two years later.

Friend of the celebrated naturalist,

Charles Bonnet, Spallanzani translated and anotated his "Contemplations" while he was writing his "Saggio di Osservazioni Microscopiche Concernenti il Sistema della Generazione, dei Sigg. Needham e Buffon." In this work, the anatomy and physiology of the infusoria are dealt with accurately and in detail, dwelling on their motility, structure, nutrition, habitat, temperature, and the effects of nocuous substances on their existence, regeneration and development. His long controversy with Needham resulted in a series of impressive disquisitions which to this day have remained epochal, and put an end to the accepted theories of spontaneous generation, preparing the way to new truths which eventually led to the germ concept of disease and decomposition and opened the way to the monumental work of Pasteur and Lister.

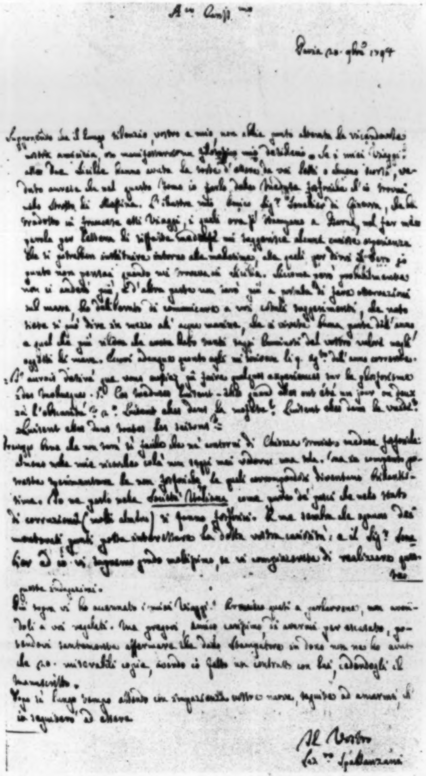

FIG. 1. UNPUBLISHED LETTER OF SPALLANZANI, BELONGING TO THE AUTHOR.

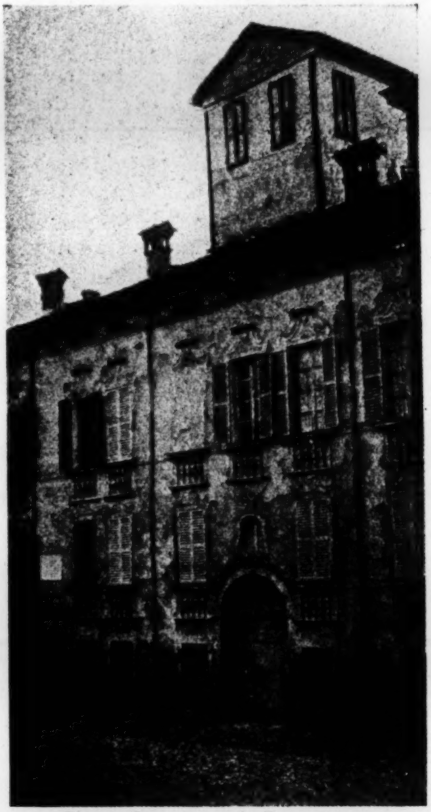

FIG. 2. SPALLANZANI'S BIRTHPLACE.

That perennial subject of spontaneous generation met with his keenest scrutiny, and he studied in detail the effect of amputation on limbs of frogs and salamanders, tails of lizards and horns of snails. The older concepts and dogmas crumbled and the scientific world stood marvelling at these new ideas. He dealt with the legendary chimera that resisted fire, as the salamander demonstrated this magnificent spectacle which had already impressed Malpighi; he demonstrated the cardiac force and rhythm transmitted to the vessels, and the independent contractility of the arteries; he studied the velocity of the blood stream, its causes and effects, and its course in the capillary network. Haller marvelled at these new facts, but yielded in the face of incontrovertible proofs, and manifested his homage in a dedication: "Illustrisimo viro, Lazzaro Spallanzani, summo natura in minimis et difficillimis indagatores, ab eius in veri finibus extendendis merita. D. D. D. Hallerus." Destre, Moret and several Italian physiologists have attributed to Spallanzani the discovery of the white blood cells (1768).

Serene and indefatigable, his experiments became manifold. Diversified types of fluids in sealed flasks were boiled and then exposed to various temperatures, to dry heat, to electrical currents and to vacuum. But the phase of all his investigations in which Spallanzani excelled and won lasting glory was in his studies on digestion ("Experienza sulla Digestone"). His experiments gave rise to an immense amount of discussion and controversy, and it is painful to note that in the ranks of his opponents was John Hunter, who gave vent to bitter sarcasm. He dubbed Spallanzani a mediocre anatomist, and accused him of having drawn erroneous and generalized conclusions from meager experimentation ("Observations on Certain Parts of the Animal Economy," by John Hunter, 1786, London). In his reply to these accusations, Spallanzani stated in clear non-recriminating manner, taking the opportunity to summarize and place on a firm foundation, his theory of the chemistry of the digestive processes. This reply was in the form of a letter which was published in 1788, and addressed to Hunter: "Lettera Apologetica in Resposta Alle Osservazioni sulla Digestone del Sig. Giovanni Hunter, Milano, 1788." In this letter he made it definitely clear that the stomach contents are of an antiseptic nature, and that no putrefactive process can occur therein; that there is a difference in the function of the muscular coats and the membranous: one was concerned with the mechanics of digestion, the other with chemical disintegration of food products. And, since in this phase of digestive theory, the authority of the great physicist Réaumur, who had found grains of cereals insoluble in the stomach of the turkey, weighed against Spallanzani, he undertook a series of experiments on hens and on himself. He swallowed food encapsulated in small perforated ivory tubes which could resist muscular pressure. This food, he found, had undergone chemical changes. He then forced small sponges tied to a long thread into the stomach of a hawk, withdrew them at given intervals, and found them saturated with a fluid with which he was able to demonstrate the first example of animal digestion in vitro. This demonstration stands on the threshold of that vast world of physiological chemistry which was to follow.

Lavoisier, the French revolutionist of the sciences, in the early months of 1791 (just three years before the Reign of Terror had swept him on to the guillotine) sought Spallanzani's opinion regarding his work on the respiratory mechanism. Two centuries earlier, Leonardo DaVinci had said somewhat epigrammaticaly: "No animal can live in an atmosphere where a flame does not burn." But the phenomenon of combustion and gaseous interchange wherein, according to his judgment, the carbonic substances of the blood united with the oxygen, was localized by Lavoisier in the lungs. To the then existing data on respiration Spallanzani added his valuable contribution: "The Mechanism of Parenchymatous Respiration," the discovery of which has been erroneously attributed to Justus Liebig. He likewise continued his investigations to include gaseous interchange and combustion as a natural manifestation of all tissues, even in animals bereft of a pulmonary apparatus.

With the completion of this work, Spallanzani turned his attention to other investigations, the phenomenon of generation and reproduction. On this subject, Haller, basing his conclusion on a vast amount of discussions and considerations, had previously concluded that "the fetus belongs to the female of the species, and is pre-existent in the genital structure." This view had received its full measure of argumentation at the hands of Harvey, Malpighi, Graaf and Vallisnieri. But Spallanzani attacked these deductions with his keen investigative vigor, experimenting on the larvæ of the salamander, the frog, on the amniotic sac, the umbilical cord, on extra-uterine and artificial fecundation; and passing from the animal to the vegetable kingdom, he was finally able to destroy the famous accepted theory of the "aura-seminalis."

With the completion of this work on fecundation and reproduction, the celebrated Spallanzani began the reorganization of the Museum of Natural History of Pavia, an institution which he had enriched with numerous collections, some of which he had bought, and others he had acquired during his various travels. Thus, from 1789 to 1790, his travels took him to Switzerland where he remained a guest of his various friends, Bonnet, Trembley, Saussure, Senebier, and the widow of Haller. While crossing the Alps, he lingered in the valleys of Savoy and Aosta; and there he found time to complete his studies on goiter and endemic cretinism. The following year, the mysterious fascination for the unknown led him along the shores of the Mediterranean to Marseilles, engaging in variously recorded observations. At Marseilles he established a laboratory for the study of marine fauna, and there dissected several species. At Porto Venere he created a similar institution for the study of sea life. He found and described accurately five new species of marine fireflies, and revealed that the depths of the sea are endowed with phosphorescent substances; he determined the phenomenon of phosphorescence of the deep sea shellfish, and observed motile power in its polyps. He assigned to the vegetable kingdom certain species of sponges and sea-moss; he proved the animal nature of corals, of fossil polyps, of the pennatulae, and of a host of other minute animals of the sea. He studied the biology of the sea-urchin, of the ascidians, of the jellyfish, of the lithophagoctic sea mussels; and, likewise, the biology of the cramp-fish, noting its electrically charged organs and its reproduction by ovulation. He found infusoria of various types, lithophagoctic worms, and innumerable other inhabitants of the sea, marshes, rocky soil and sands, He threw considerable light on the testaceous and crustaceous groups of sea animals. He analyzed fossil material at Portovenere, and the structure of the nearby cliffs. He extended his investigations to include the phenomena of water spouting in the seas of Spezia; he described the grottoes of Equi and Carrara, the torrents springing from the Apennine mountain tops, and a number of obscure meteorological phenomena.

In 1784, Spallanzani was again in Venice, where he rejected the flattering offer made to him by the University of Padua, at that time the leading school of Italy. The following year, he set sail for Constantinople to continue his observations and studies of marine life. Off the coast of Istria, he described the horrible but superb struggle of a water spout struck by the side of the vessel on which he was sailing. He observed the spectacle from the bridge, forgetful of the danger, while the crew sought refuge. At Corfu he went in quest of the royal palace of Alcinous, King of the Phoeacians, who entertained Odysseus, and of the Temple of Venus; but he failed to find them. As if to compensate himself for this failure he discovered, among the volcanic lava of the island, fossilized oysters of abnormal size which had not undergone damage by fire. He found an entire mountain of animal and human fossils, and discovered an entrance to a stalactite cavern. For three months, he travelled among the islands of the Aegean Sea, spending his time in study of the rock formation, the flora and fauna of land and sea.

At his journey's end the panorama of Constantinople enchanted him. The Ambassador of the Republic of Venice, whom Spallanzani had met while on board his vessel, invited him to occupy spacious quarters at the Venetian Embassy. Here he remained eleven months, engaged in a variety of occupations, arranging and rearranging his notations, penning his observations, describing the various structures such as mosque, temple, fountains and other strange sights he saw in the city on the Bosphorus. He likewise gathered geological material; he studied the customs and habits of the Turks; he discovered a copper mine in the island of Calki and an iron mine in the island of the Leaders.

He returned to his native country by land across the sparsely inhabited countries of Bulgaria, Serbia, Transylvania, Rumania, Hungary and Austria. Wherever he went, he was received with sovereign honors. In 1788 he again began to travel. This time he betook himself to Naples, and ascended the slope of Mount Vesuvius. He examined the smouldering lava, and established its trifaceous and feldspar nature. He discovered magnesium deposits at Pozzuoli, and described the characteristic crystalloids; he accounted for the cause of the warm exhalations from the Solfatara in the outskirts of Naples on the basis of the decomposition of sulphates of iron in contact with subterraneous currents of water. In company with the physicist Breislak, he visited the Grotta del Cane, and accounted for the presence of carbonic acid originating from the combustion of calcareous carbonates; he determined the trifaceous nature of the craters of Agnano and Averno, of Cape Miseno, of Monte Nuovo, Campi Elegrei and Procida, which differed from the composite clay and feldspar of the soil of Ischia. He discovered in the valley of Maddaloni a very porous and soft sandstone, water-absorbable and changeable by fire into mortar and cement. But his restless spirit drives him on; the overcast Mongibello attracts him; and at the age of sixty, he climbs its rugged slopes, up to its very crater, overcoming a thousand difficulties. Here, before this immense spectacle, Spallanzani lapsed into most fascinating dreams, which later he penned in a beautiful style.

On his return he visited the Eolian Islands, interesting both for the active and extinct volcanoes present. He descended into the crater of Stromboli, and determined the eructive processes, describing the various types of lava; he examined the crusts of aluminum sulphate on the rocks of Bottero and Lisca, the sulphurous hydrogen gas emanating from the sea, the granite-like lava of Panaria, the residium of the eruptions at Saline He described the famous bluish flames from the side of grottoes, and ascertained that they were due to a decomposition of sulphuric acid, rather than to a decomposition of muriatic acid, as had been previously believed. In the Island of Lipari, he examined the rock formation of the mountain, and found in the lava bits of porphyry, pumice-stone, glass, and trifaceous substances rich in carbons. He visited the volcanic structures of Alicudia and Filicuda, and examined their extinct craters.

Continuing his travels southward along the Apennine chain, he lands at Messina on the Island of Sicily, and becomes interested in swordfish catching. He found some phosphorescent jellyfish in other localities; he discovered a new species of ascidians and an octopus in which the circulation of the blood was clearly visible. He betook himself to Orbetello and to the island of Elba, both places interesting, one for the iron mines, and the other as a habitat of sea eels.

The fruit of so many observations was gathered by Spallanzani in six large volumes full of deep and detailed scientific discussion. To this work was added a volume on the swallow-fish.

In 1790 he travelled the Modenese Apennines, and climbed Mt. Cimone; there he discovered the fires of Barigazzo and of Pitramala, and noted the presence of methane gas. He visited Lake Scaffaiolo, the salt lakes of Reggio, of Querzuola and Marano. Thence he betook himself to the Euganean Hills and described their volcanic origin; and at Comacchio he was confronted with the phenomenon of the migration and reproduction of the eel, but was unable to solve this problem. The solution was later evolved by Grassi.

The material he gathered in his various travels and expeditions he brought to the University of Pavia, and there studied his discoveries much more thoroughly. He analysed these materials, determined their chemical nature, their iron and hydrogen contents. He studied the influence of gaseous formation in volcanic eruptions, and passing from mineralogy to chemistry, he contradicted the assertions of Godling of Jena on the phosphoric flame in the absence of oxygen, and maintained the absolute necessity of the gas in the phenomenon of combustion. His interest in gaseous studies absorbed his late years; his laboratory was a vast collection of tubes wherein he tried to enclose the different types of gases. No natural phenomenon escaped him, and no item was too small to call for deep consideration and lengthy discussion.

For several years, Spallanzani had

been interested in the different and complex problems of respiration, and had undertaken a number of experiments, which he was gathering in three volumes when he was suddenly overtaken with apoplexy. To his bedside numbers of celebrities hastened, including Scarpa, Brera and Tourdes, but in vain. Nine days later, on the twelfth of February, 1799, Spallanzani succumbed. He was then seventy years of age, and in his last few days before death overtook him, during lucid intervals, he conversed on the various scientific subjects that had absorbed him, attended to his religious duties, and settled his domestic affairs. The then unpublished volumes on respiration were posthumously published by Agnello Nobile four years later at Milan.

Few scientists had earned as much honor and popularity as Lazzaro Spallanzani. Revolution, violent internecine struggles, invasions (notably the Napoleonic invasion of Pavia where he was saved by a handful of French medical officers, former pupils of his) always found and left him undisturbed in his laboratory where he remained struggling on with the laws and phenomena of nature. Shortly before he died owing to his advanced age he refused a position as lecturer in the natural sciences at the Jardin des Plantes of Paris. Haller dedicated one of his volumes to him, and Bonnet wrote: "You have discovered more truths in five years than entire Academies have in half a century." And this is the noblest praise to which a man may aspire!

GENERAL AND MEDICAL SCIENCE ONE HUNDRED YEARS AGO

By IVAN C. HALL

DENVER, COLORADO

THERE has recently come into my hands a well-preserved copy of the ninth edition of Guy's "Pocket Cyclopaedia," published by G. Woodfall, Printer, Angel Court, Skinner Street, London, June, 1829. There is much in this quaint old book of interest to interpret in the light of present-day knowledge, particularly as it appeared just a few years before the announcement of the cellular conception of living organisms and the first real proofs of the microbic origin of infectious diseases, not to mention the stirring debates concerning spontaneous generation that characterized the first half of the nineteenth century.

The seriousness with which this work was presented by its publisher is indicated by the "advertisement" on the fly leaf, which states:

> So many important articles have been added; so much also of *recent* information on every subject, in which change or improvement has been made, is supplied; that they confidently recommend it as a work corresponding to its Title; and one which, from the variety, interest, and universality of its contents, will not soon be surpassed by any volume of a similar size in the English or any other language.

Then follows an "Address to Young Persons," exhorting them to make knowledge their goal, "for its own sake," for "by knowledge man stands pre-eminently distinguished amidst the creation," and:

> By Brutes all the beautiful varieties of nature and all the works and ingenuity of art are seen without intelligence, or sense of excellence or beauty . . . only man, *cultivated and refined*, can view them with the eye of reason, investigate their properties and uses; and derive from them, in a pure and exalted sense, an intellectual and social enjoyment.

The preface proper continues in similar vein and particularly declares that "care has been taken to introduce nothing that may offend the delicacy; nor anything which may tend to warp the political or religious principles in which the young Reader may be brought up," and that "nothing has been stated which has not been well examined revised, considered and discussed."

Five pages are devoted to bibliography in which a modern medical reader would recognize the names of Spallanzani, Hunter, Linnaeus, Cuvier, Bichat, Blumenbach, Gmelin, Haller, Hippocrates, Celsus, and a few others. Also *The Lancet* was even then an authoritative medical journal and the "Encyclopaedia Brittanica," a pretentious and important source of facts as now.

The "Introduction" emphasizes that in 1829 almost sixty chemical elements were known and "that the first and most important knowledge, which should claim the attention of man, is the knowledge of himself."

The text is divided, not very logically, it seems, into, four parts as follows: 1. Man; his structure, mind, passions, education, pursuits, exercises, amusements, ailments, medicines, 'poisons, drowning, hydrophobia. II. Articles of commerce, including manufactures derived from the three kingdoms of nature. III. Civil polity. IV. Arts, sciences, literature, religion, etc.

One might go far to find a better definition of science than Guy's: "Science is Knowledge reduced to a system, so as to be conveniently taught, easily remembered, and readily applied," or a better statement of the insecurity of our knowledge than,

> What was once,
> Incontrovertible, is overthrown;
> And what now seems built on the base of truth
> Perchance shall pass as stubble which the fire
> In one full blast consumes.

Medicine is defined as the "art or science of curing diseases." But, "notwithstanding much extensive experience, and the number of recorded facts concerning this important branch of science, it must with sorrow and humility be admitted, that the art of curing diseases is still in comparatively a very imperfect state." It is still true.

The pharmacologist will find here interesting notes on the origin and uses of opium, Peruvian or Jesuit's bark and its derivative, quinine, also aloes, ipecacuanha and emetine, and many other useful drugs. It is pointed out that Peruvian bark "has been employed as a medicine in Europe for over a century," and that:

> The name Cinchona has been given to this medicine after the Countess del Cinchon, wife of a viceroy of Peru, whom an Indian of Loxa cured of an intermittent by its means, in 1638. After this, Father de Lugo brought some of it to Rome; thence it spread into France and England, and is now, by way of eminence, called the Bark.

The anatomist will find an excellent plea for dissection:

> Who would trust a surgeon to amputate his limb if he were not convinced that the surgeon was well acquainted with the structure of that upon which he operates. As, therefore, a knowledge of anatomy is essential to the education of a medical man, and most of all a surgeon, it is evident that such knowledge cannot be obtained without practice upon dead bodies, in order that such knowledge may be acquired. Considerable repugnance has always been manifested, by the illiterate and uninformed, to the dissection of the dead; but it is sincerely hoped that, as knowledge becomes more diffused, and the conviction of its absolute necessity more generally prevails, such prejudices will in time be done away; and that while anatomy be pursued with decency and privacy, and some restrictions removed which now prevent the obtaining of subjects, anatomical dissection will be rendered at once, and forever, legitimate, respectable, and meritorious.

What anatomist could fail to be amused by the note that, "the number of bones in the human body is generally 240; but in some individuals, who have two additional bones in each thumb and great toe, they amount to 248?" Or what physiologist, by the curious and serious emphasis upon phrenology, the speculation as to whether "*iron* is the *cause* of the red colour of the blood," and carbon the cause of the darker color of the venous blood? Also considered the statement that "recent inquiries . . . seem to prove that the liver not only secretes the bile, which it has been long known to do, but that it contributes very materially to the *decarbonization of the blood*." However, some authorities of that time held that "decarbonization" occurred in the lungs, and that:

> In the lungs the oxygen of the atmosphere combines with the carbon of the blood, and forms carbonic acid, which is carried out of the lungs by the process of expiration; and thus the blood, losing its superabundant carbon, is restored to that florid colour which in the arteries, it universally has.

Although the absorption of oxygen by the blood in the lungs seems to have been generally accepted, there is nothing on the function of the blood as a vehicle of oxygen to the tissues; yet Harvey, of Folkstone, as is noted, had discovered the circulation of the blood and taught it in his classes at Cambridge about 1616, publishing it in 1628, almost exactly 200 years before.

Naturally to a bacteriologist the principal interest in a book one hundred years old centers in the status of such problems as concern fermentation and the infectious diseases. The latter are mentioned under the heading of "Poisons," which are subdivided into five groups: 1st, irritating (acids, alkalies, salts of mercury, arsenic, antimony and other metals); 2nd, narcotic (opium, prussic acid, bitter almonds, etc.); 3rd, acrid narcotic (mushrooms, nux vomica, upas, tobacco, and others); 4th, septic or putrefactive poisons ("poisons of the *viper* and all other animals the bite or sting of which gives rise to accidents more or less serious; animals that become baneful by being taken into the stomach; *malignant* pustules and *hydrophobia*"); 5th, poisons of certain gases.

Plague and hydrophobia are mentioned as poisons fatal in the smallest quantities, but no other infectious diseases, as we know them, are included.

Some of the remarks on hydrophobia are worthy of quotation:

> Hydrophobia, or dread of water, is a disease, of which the fear of water is only a symptom, produced by the absorption of some poison accompanying the saliva of dogs, cats, and other animals in a certain state of disease. Hydrophobia is commonly produced by the *bite* of some animal, in general by that of the dog. The symptoms of a mad dog do not appear even now well defined; while some persons assert that mad dogs loathe water, others assert that they drink freely; but, however, that this disease is distinguished by a dread of water in man is unfortunately too abundantly confirmed. A variety of remedies have been proposed for this complaint; immersion in sea water, bleeding to fainting, blisters to the part, caustics, etc. We believe, however, that the most effectual remedy is, as soon as possible after the bite, to cut out the part bitten with a portion of the surrounding flesh etc., and to apply the actual cautery to it. When this cannot be done, washing the wound well and often with vinegar and water, and afterwards applying some stimulating ointment to it to promote suppuration, are by all means desirable. The time in which this disease occurs, after the bite has been given, is very various; it has occurred sometimes as early as a week afterwards, oftener forty days, and in some it has been protracted for a year; but it usually comes on before the end of two months.
>
> No certain remedy, after the disease has once evinced itself, being known, we can only advise that all dogs should be avoided.

At the time this was written, Pasteur was seven years old; fifty-six years later (1885) he gave the world a method for preventing hydrophobia by vaccination, aside from which we have not learned much about hydrophobia in one hundred years.

Fermentation, according to Guy, is vinous, acetous, or putrid, the latter being "mostly perceived in animal substances." The necessity of a certain degree of heat, of fluidity, and for the vinous fermentation, sugar, is noted. Much space is devoted to directions for making the various kinds of wine, cider, and perry, with particular emphasis upon the requirement of fully ripe fruit. Arrack, ale, rum, and brandy are briefly described and rather detailed directions are given for malting, brewing, and distilling. One of the few illustrations in the book is that of a crude still. It is pointed out that, "most natural juices go into the vinous fermentation almost immediately after they are expressed; such as the juice of the grape and that of the apple. But the artificial solutions of vegetables, such as that from malt, require some leaven, *yeast*, to begin the process."

Yeast cells were unquestionably seen by Van Leeuwenhoek in 1680, and while the knowledge of their association with beer and wine is commonly attributed to Mitscherlich, Cagnard de la Tour, and others beginning about 1825, i.e. just four years before this book was printed, most modern writers consider that it was not until the classic experiments of Pasteur in 1859 that the relationship of yeast to fermentation was established. But the above quotation from Guy's Cyclopaedia shows that a definite idea of causal relationship existed in 1829.

There is a brief discussion of vinegar, but, of course, absolutely nothing on the microorganisms concerned in its manufacture. In spite of the fact that the principle of the compound microscope had been known already more than two hundred years, one finds in Guy's Cyclopaedia only the briefest reference to it. However, it is stated that, "microscopes are distinguished into simple and compound," and, "by microscopes an infinity of animals have been discovered not visible to the naked eye," for, "in a drop of water or vinegar, we can by these instruments perceive a multitude of animalculae of different kinds, and moving with great agility." Telescopes, both refracting and reflecting, are discussed both structurally and historically in considerable detail.

There is an interesting note on population.

> The population of the Earth by the most recent and respectable authorities is as follows:

	Inhabitants
Europe	209,862,000
Asia	482,345,500
Africa	106,383,100
America	36,593,400
Australasia	2,628,000
	837,812,000

> This after all is but a *probable* amount. Some persons rate the population of the earth as high as 1,000,000,000.

There is another interesting note on the Bills of Mortality:

> The weekly lists compiled by the parish clerks in and about London, containing the numbers of those who die, and specifying of what disease, as well as those that are born in each week. These bills are founded upon the reports of sworn searchers, who view the body after the decease, and deliver their reports to the clerks. The bills of mortality were first begun to be taken by the company of parish clerks in London in the year 1592; and in 1594 the weekly account was first made public. In 1595 they were discontinued upon the ceasing of the plague; but in 1603 they were resumed, and have been continued regularly ever since.

We learn also from Guy's, something of medical licensure one hundred years ago. "No physician can, however, practice in London, nor within seven miles thereof, without a license from the Royal College of Physicians of London."

I must not give the impression that Guy's Cyclopaedia is exclusively or even largely medical, or scientific. The chemist, the physicist, the political economist, and the student of sociology will all find historical notes as significant to them as the above seem to me. Some of the statements concerning higher educational institutions are perhaps worthy of emphasis here:

> The Universities of Oxford and Cambridge may claim perhaps the highest antiquity of any in the world; University College in Oxford was founded as early as the year 872. The University of London, lately established . . . was opened for admission of students in the autumn of last year and its success, hitherto, promises for it a brilliant career. From the list of subjects and the professors who lecture on them, it is evident this university takes a large range, far exceeding what is taught at Oxford or at Cambridge, with one exception, Theology; which, as the university is intended for all classes and sects—Jews and Gentile,—could not be admitted without compromising the principles on which it was established, namely that it should be open to persons of any religion, without distinction. It is not to be inferred, however, from this that the London University is an irreligious establishment: far from it. Many of its professors are members of the Established Church.

My conclusion shall be that of this interesting book:

These are the Steps of Knowledge; Ye are come
Within the precincts of her Temple; look
Around the goodly fane of lofty front,
Of fairest promise; lo! its numerous aisles
In structure varied, as for varied *Use*,
For *Pleasure* and for *Beauty*. Whoso here
Worships shall never find his vows unheard;
Nor shall the Goddess of benignant grace,
If here Ye enter with befitting mind—
With perseverence—purified Desires—
With *Candour—Modesty* in search of *Truth*,
And of *Utility*, handmaiden fair—
Refuse to strew upon the ample floor
Her fragrant flowers—choice gifts—her sure reward.

ORFILA—PIONEER TOXICOLOGIST

By B. BARKER BEESON, M.D.

CHICAGO

MATHIEU JOSEPH BONAVENTURE ORFILA, the creator of toxicology, was born on April 24, 1787, at Mahon, Island of Minorca, a Spanish colony and one of the Balearic group. The son of a lawyer, he was originally intended for a maritime career, but after taking a long ocean voyage he expressed a desire to forego the sea and to study medicine and its accessory sciences instead. His father being agreeable to this change, Orfila matriculated at the University of Valencia in 1804 and began at once to study chemistry and mathematics most ardently. A year later he took first prize in chemistry and physics. It was still being taught at Valencia at this time that air and water were the elements. However, Orfila learned of such illustrious chemists as Lavoisier, Berthollet and Fourcroy, and being able to secure their works he soon ceased paying attention to the theories as taught by his chemistry teacher, who was astonished at his pupil's knowledge and went so far as to ask where he had acquired it. At this time the Valencia University was accused of inferiority and even threatened with suppression and in order to disprove this accusation the Valencia Faculty arranged a scientific contest with several nearby institutions. Orfila was entered in this contest and won the first prize for his school, thus vindicating an institution which had taught him but little.

In 1806 Orfila left for Barcelona, which boasted of a superior university. He soon so distinguished himself there that the Barcelona Commercial Association agreed to send him, at its own expense, to Madrid and later to Paris for advanced studies in chemistry. Orfila signed a contract with this organization in which he agreed to spend a certain amount of time in study and to return and assume the chair of chemistry at Barcelona, and while studying he was to receive the equivalent of 1500 francs yearly. His stay in Madrid was short as July 9, 1807, found him hard at work in the French capital. War was then declared between France and Spain and because of his nationality Orfila was threatened with imprisonment, from which he was saved by Vauquelin, the well-known chemist, who went surety for him. An uncle, a Marseilles merchant, arranged to give Orfila a pension, as he was no longer supported by his backers in Barcelona. He had meanwhile matriculated at the Paris Faculty of Medicine, which conferred the medical degree upon him on October 27, 1811. His thesis was entitled "Nouvelles Recherches sur l'Urine des Ictériques." Upon graduation he found himself in dire straits, as the pension had ceased, his entire capital consisted of six francs and he had no clientèle. However, he had formed valuable friendships which, with his economy, energy and perseverence, saved the day and before long gave him enviable recognition.

He began giving private courses in chemistry the year after he graduated and these soon became popular. Two years later Orfila honorably offered to carry out the terms of his Barcelona contract, but the war had ruined his backers and he was released from the obligation. In 1816 he became a naturalized Frenchman and soon after this was appointed an attending physician to Louis XVIII, who was then king of France. That same year found him a member of the Institute and four years later he became one of the founders of the Academy of Medicine. He entered the ranks of the Faculty of Medicine in 1819 as professor of legal medicine, being made professor of medical chemistry four years later, which position he held for twenty-nine years. He was particularly interested in toxicology, toward which his courses were largely directed. In 1830 Antoine Dubois, then dean of the Faculty, resigned and secured Orfila's election to that position a year later, which he kept until the revolution of 1848 and the overthrow of Louis Philippe. During his deanship Orfila had some trying situations to meet, but his frankness and popularity did much to aid him. On July 9, 1836, following the unpopular election of Breschet to the chair of anatomy, the students became riotous, throwing stones and other missiles at the Faculty building, breaking doors and windows and entering the cloak rooms and tearing up professorial gowns. Orfila came upon the scene and by his calmness and tact did much toward quieting the disturbance. He was succeeded as dean by Bouillaud, the internist, who was unfriendly toward him. This soon became evident when Bouillaud refused to sanction certain contracts entered into by Orfila because they exceeded the budget, even though Orfila offered to meet the deficiency personally. His friends in the Faculty appealed to the Minister of Public Instruction, who at first approved of the stand taken by Bouillaud and offered to pay only about one-half of the sum involved. Later, however, he sanctioned the payment of the full amount, which was 28,000 francs. It is of interest to note that Bouillaud did not remain long as dean, being appointed February, 29, 1848, and suddenly superseded in that office on December 30th of that same year by Bérard.

ORFILA.
PHOTOGRAPH TAKEN FROM CORLIEU'S "LA CENTENAIRE DE LA FACULTÉ DE MÉDECINE DE PARIS."

Other honors which came to Orfila included membership in the general council of the hospitals of Paris, membership in the council of public instruction of the Department of the Seine, and the perpetual presidency of the benevolent association of the physicians of the Seine Department, he being the real founder and enthusiastic supporter of the latter organization. He was also a Commander of the Legion of Honor as well as of the Order of Charles III.

Orfila had meanwhile married Mademoiselle Lesueur, who was the daughter of a celebrated sculptor and the sister of a prominent chemist.

The clearness of Orfila's lectures plus his own enthusiasm did much toward his success as a professor. He was a methodical as well as an eloquent speaker and a strong voice and good elocution aided him very much. Personally he was most affable and had many friends in spite of his frankness, and as dean he quickly gained the friendship and respect of the student body. The Faculty remembered his tenure of office for the good discipline which usually prevailed, for the severe but impartial and intelligent examinations, the zeal of the students for their work and lastly for the devotion to duty of the teaching corps. Orfila tried to make the courses as practical as possible; new dissecting rooms were erected, the hospitals were improved, the Dupuytren Museum and the Botanical Garden were created.

A word about the important rôle played by Orfila in the development of the Dupuytren Museum and the Museum of Comparative Anatomy. In 1844 he went to London and visited the Hunter Museum and upon his return he wished to add a museum of comparative anatomy to the already existing one devoted to human anatomy and thus to raise to a high level the study of anatomy in France. He was given 30,000 francs for this purpose, but this proved to be insufficient. As in everything he undertook, Orfila proceeded with great energy. On November 1, 1845, the Museum of Comparative Anatomy was opened. Specimens were sought for it on all sides by the untiring dean, but particularly from the Museum of Natural History and the Veterinary School at Alfort. As a recognition of his invaluable services in this connection the Museum was named for him on November 26, 1847. To house the Dupuytren Museum Orfila utilized the refectory of the old Franciscan monastery. Two months afterward it had been converted into a museum, which was opened on November 2, 1835, or about nine months after the death of Dupuytren. It is devoted exclusively to pathological anatomy.

On January 1, 1853, Orfila gave 121,000 francs to the Faculty of Medicine of Paris, stipulating that one-half of it was to be devoted to the Orfila Museum.

Orfila was the leading medicolegal expert of his day. He made a splendid witness, holding not only the court, the jury and the spectators spellbound, but the whole of France as he untangled the best laid plots and passed before the eyes of his audience the telltale spots from the victim's organs, which convicted his murderer. He wrote a textbook on medical chemistry which went through eight editions from 1817 to 1851, but he will be particularly remembered for his writings on toxicology. Among them was: "Aid to be Given to those who have been Poisoned or Asphyxiated (1818)." This was translated into English, German, Swedish, Italian and Portuguese and appeared in four editions. His lessons on legal medicine (1821) were later given the title "Traité de Médicine Légale," and lastly the work dealing with changes produced in cadavers by putrefaction was published (1831). In 1841 Orfila wrote extensively on poisoning by arsenious acid. He collaborated in the *Archives Générales de Médicine*, the *Annales de Chimie et de Physique*, and the *Annales d'Hygiene et de Medicine*, besides writing 230 articles for the Medical Dictionary.

Orfila died March 12, 1853, of pneumonia and was buried in the Montparnasse Cemetery.

JEAN PAUL MARAT

THE PHYSICIAN AS REVOLUTIONIST

By E. P. SCARLETT, M.D.

IOWA CITY

"Across these scenes I could follow Marat that was never himself, and that carried a mad torch without sequel, but just avoiding catastrophe."—Belloc's "Robespierre—A Study."

"Behaviour is the garment of the mind."—Bacon.

THE restless probing pen of the modern biographer with very few exceptions has left untouched the figures of medical history. The annals of medicine are for the most part the record of sober achievements by men who put their full energy into their professional careers. Their names constitute the line of the great tradition with which after all medical history, being extremely careless about the lesser fry, has contented itself. These great names have been singularly out of place in the biography of our time with its small talk, anecdotes and scandal. There has been some exploring of the more quiet back-waters, notably in such works as Dr. John Brown's essays and Osler's sketch "An Alabama Student." But it seems inevitable that medical biography should move within conventional limits, much as one may regret the "life and letters" type of record and even cry out like the old scribe that much of it "dulleth the wits, rankleth flesh and palleth oft fresh bloods." For the unusual, one must turn to the fringes of medical history where there are to be found many physicians who have won fame in other fields than medicine.

One of the most notable of this group is the figure of Jean Paul Marat, the physician who achieved immortality as one of the leading spirits of the French Revolution. Marat was one of the trio—Robespierre, Danton and Marat, who were the dictators during the most stormy years of that period. Few men in history have been as savagely attacked and yet it would seem as if history had yet not made up her mind about this man. The final estimate has still to be written. In the great majority of the records Marat is considered as a blood-thirsty monster or at least as a sinister figure or an unbalanced fanatic. It happens that practically none of his contemporaries who left memoirs were favorably disposed towards him. Most of the historians of the Revolution have treated him harshly; political biography has set him up as a vehement apostle of the doctrine of government by murder; the more imaginative historical writers such as Carlyle have found him a ready subject as the mad villain of the piece. In all, his character has been drawn in such lurid lines that one instinctively suspects that it has been exaggerated.

It is further too facile an explanation to dismiss Marat as insane. He lacked the intellectuality of Robespierre or Danton and cannot for a moment be considered with either. There were totally lacking in him the qualities of a great revolutionary leader. All his violence and suspicions are the mark of mediocrity and fanaticism. But if he were merely a psychopathic case and nothing more he would not have achieved the influence that he did in his own time nor have continued to hold the position that he does in history. In a measure he presents the same problem as Joan of Arc; are we justified in assuming that the leading figure of a moving episode in history was insane? It is a problem that modern psychology with its facile jargon does not seem capable of coping with.

It would seem the part of wisdom therefore to hold the middle course in a consideration of a man about whom the fires of controversy have raged. Marat is not the glorified figure of the early Revolutionist historians nor on the other hand quite "the villain and sectary of hell" (to use Sir Thomas Browne's phrase) that the majority would have us believe. His life was played out against a complex background. Unlike most lives it is too dramatic to be dull. His early career is obscure, but he does come into clearer view as a respected member of society with an extensive medical practice and with the urge to write scientific and more particularly political treatises. At the outbreak of the Revolution he was forty-five and had it not been for that event he would never have been heard of. The Revolution achieved for him, a relatively obscure doctor and dabbler in politics and, it must be admitted, in certain phases the medical quack and sharper, a lasting place in our history. The conscientious and brilliant physicians of his day, who would not admit him to their Academy of Sciences, have disappeared. As Sir Thomas Browne justly remarks: "The iniquity of oblivion blindly scattereth her poppy, and deals with the memory of men without distinction to merit of perpetuity."

Any sketch of Marat's life must assume the limitations inevitable in a brief study and can profess to be only an impression of a figure that must always interest the student of medical history. In view of what has already been suggested it can be little more, to use Sir Clifford Allbutt's happy phrase, than an excursion "in the byways of the fallible."

HIS EARLY YEARS AND CAREER AS PHYSICIAN

An accurate account of Marat's early life, indeed of his whole career prior to the Revolution, taxes even the most restrained and rigorous historical judgment. Many of the facts are drawn from Marat's own statements which are colored by his habit of exaggeration and must be heavily discounted. Then legends grew up about him, as has happened with many unusual characters of history, and sober citizens in after years, recognizing in the dreaded Marat of the Paris mob the more conventional figure of earlier times allowed their imaginations to recreate a character in keeping with his later career.

Marat was born in 1743 in the Swiss Canton of Neuchatel. The family name was written as Mara. His parents were poor, his father being a printer and designer. The boy was self-supporting and received his education by dint of hard work. He studied medicine at the University of Bordeaux and for a time at least attended schools in Toulouse, Paris and London. About 1765 at the age of twenty-two he began the practice of medicine in Church Street in the Soho district of London. The first specific record which we have of him is two years later. Old Slaughter's

Coffee House stood at the upper end of St. Martin's Lane, a street tenanted by English and foreign artists for whom "Slaughter's" was a social center. Two artists speak of Doctor Marat who lived near by. He apparently treated one for gonorrhea. They note that he was interested in politics, a follower of John Wilkes and sympathetic with all opposition to government. From 1770 to 1772 one record states that he practiced human and veterinary medicine in Newcastle-on-Tyne. An observer in Newcastle writes: "It was difficult for me to conceive the sallow man with pockpitted countenance, black flat hair, blood shot eyes and spasmodically twitching mouth—the incarnation of the repulsive—so highly regarded." This account of a residence in Newcastle is not strongly supported by fact, and in the observation quoted which was written after the Revolution there is an example of the custom already noted to view Marat; as he was then regarded by nearly all Englishmen, as the devil incarnate.

At any rate in these early days Marat was a responsible member of society, with a medical practice of some size and well thought of by his fellow citizens. He reflected the catholicity of interests characteristic of the men of his time, was a voracious reader, and having come under the influence of Voltaire and Montesquieu was particularly interested in political thought and in the growing agitation for political and social reform. About this time he began to write and in a short period published his first work, "An Essay on the Human Soul," in which he declared that physiology alone could solve the problems of the connection between soul and body and proposed the existence of a nervous fluid as the true solution. Two years later he published anonymously and in English his first political book, "Chains of Slavery." It consisted of sixty-five chapters in which "the dark objects, crafty proceedings, secret plots, fatal policy and deceitful arts" of "royal despots and tyrant princes" are set forth. Its purpose was "to secure the triumph of liberty in England." He says that in writing this book he devoured thirty volumes, worked twenty-one hours a day for three months, kept going by drinking excessive quantities of coffee, that immediately on completion of the book he fell ill, became stuporous, lost all power of memory, and recovered in thirteen days "by the aid of music and repose." The book is the production of the unbalanced political fanatic but it really antedated the Chartist movement for reform in England.

On the thirtieth of June, 1775 (Marat was now thirty-five) he was granted an honorary degree of M.D. by St. Andrews University. The fact is that St. Andrews at this time was desperately short of funds and an honorary degree was to be obtained by the payment of ten guineas without examination on the recommendation of two physicians. He returned to practice in Soho, London. His name does not appear in any medical or social directory of the time. No one could practice in London or seven miles around it without the license of the Bishop of London or the Dean of St. Paul's made on the recommendation of four "doctors in physic" or other "experts in surgery." There is no record of Marat obtaining such a license. He published about this time two medical tracts entitled

"Singular Disease of the Eyes" and "An Essay on Gleets." These pamphlets were republished in 1891 by Bailey, the librarian of the Royal College of Surgeons of England.

Marat left England in 1777 and returned to Paris. He had probably enjoyed a fair practice in London and was a man of some social position. One post-Revolutionary legend would have it that he taught French for a time at an academy in the Midlands of England under the assumed name of Monsieur Le Maitre. Another more sensational story states that while acting as an instructor in drawing at Oxford he broke into the Ashmolean Museum and stole a group of valuable medals and chains, later escaping to London and finally to Dublin where he was arrested and returned to Oxford. The story further relates that he was tried and sentenced to five years' hard labor on the docks at Woolwich and after serving six months of this time escaped to France. There is no adequate basis for these stories which are little more than interesting legends intent upon making Marat act as it were in character as a melodramatic figure even during these peaceful years in England.

On his return to Paris he conducted an independent practice for several months but very shortly after entered the household of the Comte d'Artois as physician of the body guard. It is said that his duties entailed some veterinary work but this fact is not well substantiated. Carlyle in his treatment of Marat consistently magnifies this point and treats him practically as an uneducated horse-leech. Such a view is manifestly absurd, as Marat in his office as physician under Comte d'Artois's patronage acquired a wealthy clientile and moreover by his writings was received by the scientific circles of the city. A contemporary gives the following account of Marat's introduction into the household of the Comte, an account colorful though possibly overdrawn:

> On the 24th of June, 1777, the gatekeeper of the Comte's magnificant mansion witnessed the arrival of a curious personage. Although only five feet tall, he carried his head proudly. It was broad and bony, thin-lipped, brown-skinned. His brilliant eyes, full of fire, were not on the same horizontal line because one of his cheekbones was higher than the other. To sum up, a pitiful looking individual whose aspect inspired simultaneously a sort of repugnance, disgust and contempt.
>
> The gatekeeper laughed.
>
> "And what name shall I have the honour of sending in to Monseigneur?"
>
> The little man rose on tiptoe, drew up his slender figure, and said with his hand on his sword hilt,
>
> "Announce the Chevalier de Marat. I am the new Doctor of Monseigneur's body-guard."

Marat's practice grew and within three or four years he had gradually worked his way up among the wealthy bourgeoisie of the city. He particularly acquired a reputation as a specialist in diseases of the chest and of the eye. His success in the case of the Marquise de L' Aubespierre brought him temporary fame. This woman suffered from pulmonary tuberculosis but also was a confirmed neurotic individual. Marat was able to improve her condition greatly and probably on the strength of this case he put forward a medicine to cure tuberculosis. In 1778 this remedy was analyzed by Abbé Teissier, doctor regent of the Faculty of Medicine of the Royal Medical Society and found to be little more than chalk and water. His reputation as a scientist however grew, based chiefly upon various papers dealing with light, electricity and fire. These treatises contained nothing unusual or worth detailing. He gave several demonstrations in physics and on one of these occasions Benjamin Franklin, whose interest in such matters is so well known, was a member of the audience. Marat hoped as the result of his scientific work to be elected to the Academy of Sciences. He was always chagrined because this honor was denied him and nursed a lifelong grudge on this score. Already in such incidents is to be seen the first suggestion of two traits in his character which all but mastered the man in the later years of conflict: distrust of others' motives and a persecution mania.

There is no record of Marat's activities in the two or three years preceding the outbreak of the Revolution. Phipson, an English writer, recently has brought forward evidence that Marat again went to England where he was engaged in several doubtful projects and on one occasion was imprisoned. The evidence supporting such a contention is not convincing. It is probable that he continued his practice in Paris although latterly he left the household of the Comte d'Artois. But his medical and scientific interests must have been gradually retreating into the background as the increasing social unrest claimed his attention. The medical dabbler in politics was gradually being drawn into the vortex and by the year 1788 reforming zeal was rapidly passing into fanaticism.

For in France events were moving rapidly up to the Revolution. Rousseau had been its first voice. The material misery caused by the wars of the great Louis and the contrast which had existed between orders in the social life for generations were stirring the nation. The misery of the common people was profound. There is La Bruyere's word picture of "certain wild animals, male and female, scattered over the fields, black livid, all burnt by the sun, bound to the earth that they dig and work with unconquerable pertinacity; they have a sort of articulate voice, and when they rise on their feet, they show a human face and, in fact, are men." The gaunt spectacle which we call the Revolution was gradually coming "into pale outline." In this year, 1788, the Notables met and advised the King and his ministers that the Estates General which had not been convened for one hundred and fifty years should be called together. The assembly of this body was decided upon, the election causing a flood of pamphlets, one of the most prominent being Marat's. In May, 1789 the Estates General convened, and in procession marched to Notre Dame Cathedral for divine worship; the King, the clergy, the nobles and the six hundred representatives. Standing on tiptoe watching that procession is our physician. Carlyle with all his picturesque vigor of style tells the story thus:

> Surely also in some place not of honour, stands or sprawls up querulous, that he too though short, may see—one squalidest, bleared mortal, redolent of soot and horse drugs: Jean Paul Marat of Neuchatel. O Marat, Renovator of Human Science, Lecturer on Optics, O thou remarkablest Horse leech, once in D'Artois' Stables—as thy bleared soul looks forth through thy bleared, dull acrid, woestricken face, what seest it in all this?

Marat saw the coming Revolution and from now on his story becomes that of the Revolution. Marat the physician is dead.

MARAT THE REVOLUTIONIST

At the outbreak of the Revolution Marat was forty-five. His career up to this time had been that of the man of science; he was unprepossessing in appearance, violent in manner, egotistic in outlook. The forces gradually gaining momentum through the nation fired the political ideas which he had always cherished. By a transition as rapid as it was complete he became the firebrand of the Paris mob and one of the directing geniuses of the Revolution. He founded a paper in 1789, *L' Ami du Peuple*, and through it attacked everyone in power. His first notable attacks were those upon Necker, Lafayette and Mirabeau. In these days and in the stormier ones which followed he stood alone, attached to no party. Suspicion was present in his mind to a pathological degree. He suspected whoever was in power at the moment. If one person nursed a grudge against another he had only to denounce him to Marat, and the denounced was never let alone until proved innocent or guilty. Probably the most sober judgment which may be passed upon him is that more than any other he had within him the seed of violence which later was to become the Terror.

He first came into prominence at the sacking of the Bastile. Carlyle describes the circumstances thus:

> One poor troop of Hussars has crept, reconnoitering, cautiously along the Quais, as far as the Pont Neuf. "We are come to join you," said the captain; for the crowd seemed shoreless. A large-headed, dwarfish individual, of smoke-bleared aspect, shambles forward, opening his blue lips, for there is sense in him, and croaks: "Alight then, and give up your arms." The Hussar captain is too happy to be escorted to the Barriers, and dismissed on parole. Who the squat individual was? Men answer, It is M. Marat, author of the excellent paper, "Avis au Peuple." Great truly, O thou remarkable Dogleech, is this, thy day of emergence and new birth.

As soon as Marat attained prominence as a revolutionary leader he became unkempt in appearance, wore his shirt open at the neck, a sash about his head and pistols in his belt; the typical "sans-culotte" of the period. At first he was favorable to the King and advocated a constitutional monarchy. He took a large part in directing the mob which escorted the King from Versailles to Paris. Through his paper he continued to preach revolution and to thunder against the leaders. Gradually his violence and suspicion became allied to a love of glory and a fixed idea that he was the only patriot in France. These characteristics are reflected in his writing which was grandiose but which appealed to the Paris populace. Marat's was the greatest influence of all the journalists of the Revolution. One example of his style must suffice.

> All that a man of sense and a man of heart could do to save his country, I have done to defend mine. Alone and without support I have fought for two whole years against the commissioners of sections, the municipal administrators, the chiefs of state, the government, the prince, the National Assembly itself, and often with success . . . I have unmasked the Parisian general, raised the army and the fleet against their despotic chiefs; more than once I have compelled committees to resign, to suspend or to revise their projected decrees; I have struggled against oppressors of every kind; I have rescued a hundred thousand

> victims from judicial tyranny. More than once I have made the tyrant on his throne turn pale, and dismiss his frightful agents . . . Exposed to their wrath I have been pursued again and again by the ministers and the municipal administrators. Twenty military expeditions directed against me, and a whole army mobilized to tear me away from the people have only increased my audacity. A price has been put on my head: five cruel spies put on my tracks, and two thousand assassins paid to slay me, have not for an instant succeeded in making me betray my duty . . . This kind of life, the mere recital of which freezes the most callous heart, I have led for eighteen long months without one moment complaining, without once asking for rest or recreation, without heeding the loss of my health, of my estate, and without blanching at the sight of the sword always pointed at my heart.

He was constantly being denounced and finally following his attack upon the Commune he was forced into hiding and fled to England. Danton made his first public appearance in obstructing the police in this "Affaire du Marat." After a short time the political refugee returned to Paris and lived like a hunted dog in the cellars and sewers of the city. He was attended only by the woman, Simonne Evrard, whose devotion he always inspired. They were formally affianced in December, 1791, Marat having been acquainted with her family. He took her to wife with his own private ceremony in 1792. The civil rite was never carried out. She lived with him constantly after that. Marat was never a libertine. Carlyle says of this period:

> Poor is this man, squalid and dwells in garrets; a man unlovely to the sense outward and inward, a man forbid, and is becoming fanatical possessed with fixed idea. Did nature, O poor Marat, as in cruel sport, knead thee out of her leavings, and miscellaneous waste clay; and fling thee forth, a distraction into this distracted Eighteenth Century. Work is appointed thee there which thou shalt do. The Three Hundred have summoned and again will summon Marat; but always he croaks forth answer sufficient; always he will defy them or elude them; and suffer no gag.

Marat was thus the free-lance agitator and journalist until he was elected to the Assembly in 1792. In this body he was unpopular; no one would sit beside him. Danton said of him: "I say frankly that I have had experience with his temper. He is not only volcanic and bitter but unsociable." And yet he forced a hearing for himself. Day in and day out he harangued the newly elected representatives of the people and croaked, "Nous sommes trahis." He insisted that two things were needed to cleanse France: the death of the king and the guillotining of two hundred and seventy thousand aristocrats. Madame de Pompadour had gayly exclaimed some time before, "Apres nous le deluge!" Verily, the deluge was about to descend. Marat in a word insisted that counter revolution could be combated only by a policy of terror. He had long since abandoned the hope of a constitutional monarchy. But with all his demand for the rule of the people he really distrusted democracy and wished to have power constituted in a committee or a dictatorship. That power was to be exercised in a ruthless fashion and it is because more than any other man he symbolized this policy of terror that his figure is an important one in the history of the Revolution. His demand for the destruction of the old aristocracy of France is described by Carlyle in dramatic fashion.

> Two hundred and seventy thousand aristocrat heads—that is the precisest calculation though one would not stand on a few hundreds; yet we never rise as high as the round three hundred thousand . . . A Cassandra—Marat cannot do it, with his single shrunk arm; but with a few determined men it were possible . . . There is no jesting in those rheumy eyes; in that soot—bleared figure, most earnest of created things; neither indeed is there madness of the strait waistcoat sort!

War with Austria was begun in April, 1792 which Marat opposed as serving the purpose of the Royalists and withdrawing the leaders of the people from Paris to the battle front. In December the king was brought to trial; on the 20th of January, 1793, sentence of death was passed upon him and on the following day he was beheaded. Revolts burst out all over France. A reign of lawlessness and blood succeeded. The months of the Terror began. Marat was now supreme. He had been engaged in a bitter struggle with the Girondists, the conservative or moderate party. At first the tide had gone against him; the Girondists ordered his trial before the Revolutionary Tribunal. Carlyle again:

> Thereupon there comes, visibly stepping up, visibly standing aloft on the Tribune ready to speak—the Bodily Spectrum of People's Friend Marat. Shriek, ye Seven Hundred and Forty Nine; it is verily Marat, he and not another . . . "It appears" says Marat to the shrieking assembly, "that a great many persons here are enemies of mine." "All, all"—shriek hundreds of voices; enough to drown the people's Friend. But Marat will not drown; he speaks and croaks explanation; croaks with such reasonableness, air of sincerity that repentant pity smothers anger, and the shrieks subside, or even become applause. . . . Then the shrieks rise anew, and the Decree of Accusation is on the point of passing; till the dingy People's Friend bobs aloft once more; croaks once more persuasive stillness, and the Decree of Accusation sinks. Whereupon he draws forth a pistol; and setting it to his head, the seat of such thought and prophecy says, "If they had passed their accusation Decree, he, the People's Friend, would have blown his brains out." A People's Friend has that faculty in him—"No power on Earth can prevent him from seeing into traitors and unmasking them —by my superior originality of mind." An honorable member like this Friend of the People few terrestrial Parliaments have had.

He was finally impeached and sent before the Revolutionary Tribunal for trial, acquitted and returned to the Convention with the people of Paris at his back. We read:

> But on Wednesday afternoon, 24th of April, year 1793, what tumult as of fierce jubilee is this? It is Marat returning from the Revolutionary Tribunal . . . And so the eye of History beholds Patriotism which had gloomed unutterable things all week, break into loud jubilee, embrace its Marat, lift him into a chair of triumph, bear him shoulder high through the streets. Shoulder high is the injured People's Friend, crowned with an oak garland amid the wavy sea of red night-caps, jackets, grenadier bonnets and female mobcaps; far sounding like a sea. The injured People's Friend has here reached his culminating point; he too strikes the stars with his sublime head.

The convention was purged of Girondists, and Marat with Robespierre and Danton ruled supreme.

He was the first of the Triumvirate to fall. Charlotte Corday, a young woman of twenty-four, living in Caen and in sympathy with the Girondists conceived it her duty to kill Marat.

With a note of introduction to him and a slight stock of luggage she left Caen on Tuesday, the ninth of July, 1793. Arriving in Paris she purchased a large sheath-knife in the Palais Royal. That same morning she addressed the following letter to Marat by post:

> Citizen:—
>
> I have just arrived from Caen. Your love for the country makes me think that you will be interested to know the unhappy events in that part of the Republic. I will call upon you about one o'clock. Be so good as to receive me and grant me a moment's interview. I will show you how to render France a great service.
>
> Charlotte Corday

As Esquiros says, "A perfidious intention like a knife-blade was hidden under the last sentence."

Receiving no reply Mademoiselle Corday took a hackney coach to the Rue des Cordeliers No. 44 (now Rue de l'Ecole de Médecine),—the residence of Citizen Marat. She was denied admission; the citizen was ill. She returned again at seven in the evening and insisted on admission. Marat overhearing her plea that she bore important news from Caen cried out from within, "Admit her." He was in his bath. For years he had been a sufferer from what modern observers believe to be dermatitis herpetiformis. The agony of the pruritus was intense and for years he had no relief save when in his tub. He stayed in it for hours, worked in it and was killed in it.

Marat asked Charlotte her business. She gave him the names of several Deputies at Caen whom she said were traitors. "Their heads shall fall within a fortnight," he croaked in reply. As he took up his tablet to write, Charlotte stabbed him, making a wound, as the autopsy record shows, "between the first and second rib, traversing the upper part of the right lung as well as the aorta and going into the left clavicle." He died instantly. It was the evening of the 13th of July, 1793, just four years after the eve of the Bastille Day when Marat had first become a notable among Patriot men.

The death stirred the nation. Charlotte Corday was summarily tried and guillotined. Robespierre's sole comment on the event was, "I am myself marked out for daggers." The mob made a god of Marat; the whole Convention attended his funeral. His bust was placed in the Convention Hall. The noted artist of the day, David, painted a portrait of "Marat Assassinated," and a worship was rendered to the "Friend of the People." His ashes were transferred to the Pantheon with pomp on September 21st, 1794, but with the fickleness of popular favor cast out again by a decree in the following year.

So died Marat. He must be considered as a product of the explosive atmosphere of the Revolution. His claim to a place in the history of the time is due to his destructive invective, his journalistic skill, his amazing vigor and his unrelenting attacks upon the more reactionary counter-revolutionary figures. In his fanatic devotion to the cause he overstepped at least at times those indefinite boundaries which we attempt to assign to sanity. The furnace through which he passed played upon the worst in his character. Admittedly he was not one of the great souls of a period which has remade the world. But in his fantastic mind, side by side with the madness was a belief, strained and warped as it was, in great truths which somehow led him on to his destiny. No physician with a stranger or more dramatic history ever lived.

SEMMELWEISS

By E. ROBERT WIESE, M.D.

SCHENECTADY, N. Y.

IN almost every age and generation there are those who, either by their teachings or their writings, or both, systematize and preserve the knowledge of their day and pass it unto the succeeding ages and generations. They discover no new facts, they advance learning not at all, they merely reap what others have planted and sown; and hoarding it in great storehouses feed the intellectual hunger of those who come after them. They are looked upon as the teachers of their day and age and generally theirs has been a life filled with honor and respect, if not of great wealth. They have been likened unto torch-bearers, who, holding aloft the sacred flame, dispel the shadows of superstition and dissipate the darkness of ignorance. Of these Fame writes but few upon her scroll.

Occasionally, however, there arises some earnest, seeking soul, who, evolving a new truth, discovering a new fact, lights a new torch, as it were, and dares hold it aloft for all men to see. These are the makers of their science and almost without exception theirs has been a life of hardship and harassment, of controversy and strife to make known the truth as they saw it, a *via dolorosa*, of ridicule and discredit, of contempt and scorn. Yea, there are those who have died in defence of their life-saving convictions, a vicarious laying down of one's life that others might live, than which no man hath greater love. History is not without its roll of such martyrs to science, even as it boasts of its martyrs to religion.

Ignaz Philip Semmelweiss, the son of a well-to-do shopkeeper and Theresa (Mueller) Semmelweiss, of the same social class, was born the middle of July, 1818 (some say July 1, 1818) in Ofen, Hungary. The inquisitive minded will search modern atlases in vain for his birthplace as Ofen, Buda, Kobanya and Pesth were formally incorporated in 1872 as Budapesth. To those who contend that Semmelweiss was a Hungarian, his name need present no unsurmountable obstacles when it is recollected that numerous colonies of Germans and Austrians planted in Hungary to stamp out the national spirit and temper, and instill in its stead Teutonic ideals and principles, invariably failed in their purpose, either by being absorbed by the natives in marriage, or by being driven out by force. And thus, while German and Austrian names might survive, within a few generations such were regularly borne by ardent, patriotic Hungarians, oft-times the more fervent and national-spirited because of their recent conversion. It is not the only instance of miscegenation disappointing its advocates.

The absence of any save the most meager accounts of his boyhood and youth lead to the assumption that his early years were without unusual or especially interesting happenings. He was the fourth of a family of eight children and although education was at a low ebb, at this time, Ignaz Philip received full benefit of all available opportunities. That he never received any systematized course of educational training and instruction in the elementary schools, and consequently never felt the restraints of strict authority, is too strong a point to be overlooked by those who contend that our modern system tends to dwarf intellectual stature, to destroy initiative of action and cripple originality of thought in the pupils of today. It is a matter of record, however, that after spending two years at the University of Pesth as a student of philosophy, literature and Latin, he enrolled in the Law Department of the University of Vienna in the Fall of 1837. A story, perhaps more pleasing for its romance than its veracity, relates that Semmelweiss was induced some time later to visit the Medical School and was so impressed by what he saw that he decided to become a follower of Aesculapius. Be that as it may, the fact remains that in 1839 he matriculated at the University of Vienna Medical School where he devoted one year to the study of medicine. The second and third years of the course were taken at the University of Pesth, after which he returned to Vienna, completed his studies and passed the examinations in March, 1844. The usual formality of a Latin dissertation (in his case "De Vita Plantarum") was fulfilled, but mortal illness of his mother called him home suddenly and for a time it was questionable whether he would receive his degree were he not present when his name was called. His fears were groundless, however, and he was granted the degree of Doctor of Medicine by the University of Vienna, in April, 1844.

Even before graduation, Semmelweiss had repeatedly taken special courses in obstetrics and on August 1, 1844, he received a second degree, that of "Doctor of Midwifery." Previous to this (July 1, 1844) however, he had made application for the position of assistant in the First Obstetric Clinic, but not until July, 1 1846 did he receive the appointment. His tenure of office was short-lived as Breit, whom he succeeded, asked that his term be extended for two years and was successful in his petition. Semmelweiss was therefore compelled to resign his new position in October, 1846. Deeply disappointed at having the coveted assistantship thus taken from him, Semmelweiss began the study of English with the intent of going to Dublin to practice, when Fate intervened. Breit was called to fill the chair of obstetrics at the University of Tuebingen and Semmelweiss was again appointed first assistant in the First Obstetric Clinic under Dr. Klein. After a short sojourn in Venice he undertook his duties in the Student's Clinic, March 20, 1847. The time of waiting had not been wasted, however, as he had assisted in the practical clinical work of the First Clinic, and had devoted by far the greater part of his time to regular attendance at and performance of autopsies on the bodies of those who had died in the gynecological and obstetrical divisions of the hospital, thereby laying the foundation for the work that has immortalized his name.

Puerperal fever at that time was a scourge, not only of Austria, but of every large teaching obstetric clinic of Europe. Women entered the First Clinic, where medical students were taught, as though approaching the Valley of Hinnon and begged upon their knees that they might be taken to the Second Clinic, where the midwives presided and received instruction. For several years antedating his appointment, Semmelweiss had wondered at the frightful mortality and had sought the cause not only at the autopsy, but at the library table as well. The very multiplicity of theories explaining the epidemics of puerperal fever that not only more than decimated but, at times, even closed the Obstetric Clinics reveals the sad state of knowledge regarding the true cause. It was regarded by the different schools as a species of typhus fever, as a malady of miasmatic origin, as a "condition due to fibrinous crasis of the blood originating under the influence of a cosmic telluric character," as referable to overcrowding of the clinics, as originating in fear, as due to suppression of the lochia, and lastly but not least, the milk-fever theory with some modification was taught by not a few, especially in Vienna. As Semmelweiss put it in later years: "Everywhere questions arose; everything remained without explanation; all was doubt and difficulty. Only the great number of deaths was an undoubted reality." Apparently everything was tried to combat the ravages of the visitations, but without any favorable results. It would seem that no detail was too slight; Semmelweiss later even adopted the lateral position in the First Clinic instead of the usual dorsal, for no other reason than that the former was the one in general use in the Second Clinic, where the mortality was always lower than that in the First. And comparison of the results of the clinics was indeed odious.

And bad as these statistics were, they were "doctored" as it was nothing unusual to transfer very sick women from the First Clinic to the Second to die. And while this horrible mortality was as a grewsome nightmare to Semmelweiss, trifling variations in operative technique, insignificant changes in instruments, fantastic therapeutic vagaries were the subject of discussion of professors and assistants. Carl Braun, Semmelweiss's successor, devised a blunt decapitation hook!

	First Clinic			Second Clinic		
	Cases	Deaths	Per Cent	Cases	Deaths	Per Cent
1841	3,036	237	7.7	2,442	86	3.5
1842	3,287	518	15.8	2,659	202	7.5
1843	3,062	274	8.9	2,739	164	5.9
1844	3,157	260	8.2	2,956	68	2.3
1845	3,492	241	6.8	3,241	66	2.0
1846	4,010	459	11.4	3,754	105	2.7
	20,042	1989	9.9	17,791	691	3.4

Certain features characteristic of the disease, however, did not escape the notice of Semmelweiss: instances in the Second Clinic invariably occured scattered about the ward, in the First Clinic patients sickened in rows; cases of prolonged labor, and consequently more frequent vaginal examinations, suffered the highest mortality; premature births had a reduced incidence of disease; women delivered on the way to the hospital rarely were afflicted; the mortality was higher in the First Clinic (where the medical students examined and treated the cases) than in the Second Clinic (assigned to midwives); the disease not infrequently raged in the hospital when there was scarcely a case in Vienna; no season of the year was especially and invariably favorable to the incidence of the disease; the percentage of the deaths was not lowest when patients were fewest. And so Semmelweiss was not only puzzled, but at times well-nigh distracted, by what he must helplessly witness.

What seemed to most a tragic, but not an unusual thing, took place shortly after Semmelweiss returned to Vienna. His good friend Kolletschka, assistant in pathology, unfortunately received a puncture wound of one of his fingers and died with all the symptoms of puerperal fever. At the autopsy the findings were identical with those so often seen by Semmelweiss during his "marking time period" in the bodies of those from the gynecological and obstetrical wards; the lymphangitis, the pericarditis, the pleurisy, the peritonitis, the meningitis, and the metastases were all found.

And then a light, a great light, such as struck Saul of Tarsus near Damascus, dawned upon Semmelweiss. It was all so clear, so appallingly clear! Kolletschka performing an autopsy was slightly wounded by the knife in the hand of his assistant; he developed all the signs and symptoms of puerperal fever. At autopsy all the features of puerperal fever were found. Ordinary wounds did not so react! Therefore, something that caused the disease must have been carried by that knife from the dead body to Kolletschka's finger. And students usually came directly from the dissecting rooms (the cadavers were not embalmed) and from the performance of autopsies to the obstetrical wards and examined women in labor, oftentimes without even a perfunctory washing of their hands, and carried on their hands this same something. Prevention of such transference ought to eliminate puerperal fever! In May, 1847, orders were issued and enforced by Semmelweiss that every student *must* wash his hands in chlorine water (later a solution of chlorinated lime was used) before entering the Obstetrical Clinic and within seven months the *mortality dropped from 12 per cent to 3 per cent.* The next year revealed something little short of a miracle for, whereas the death rate in the First Clinic for 1846 was 11.4 per cent, the percentage for 1848 was 1.27 per cent. For the first time in its history the ratio of the First Clinic was lower than that of the Second. Still more marvelous, there was not a single death due to puerperal fever in the First Clinic during March and September, 1848. And while *post hoc ergo propter hoc* was as poor logic then as it is now nothing but the vigorous use of chlorine water served to explain the fact. Under the circumstances it was but natural that Semmelweiss should believe (and the belief was prevalent among his contemporaries for years) that the nocuity was of cadaveric origin. An outburst of puerperal fever in the First Clinic in the latter part of 1847 taught him otherwise. Up to that time washing the hands first with soap and water and then with chlorine water (or its substitute) before beginning examinations, with perhaps a cursory washing with soap and water between cases, had been deemed sufficient. In October (1847) it happened that a woman suffering with an infected medullary carcinoma of the cervix uteri was in a row of twelve patients, and in the subsequent flare-up of the scourge *eleven* of those women died of puerperal fever. Also in November of that same year there was admitted to the ward a woman with a badly infected caries of the left hip bone, and that infection was carried by the hands of the attendants to the women in the ward. Semmelweiss, after reviewing the histories and probable causes, ordered that the hands of the examiner be washed in chlorine water before each examination, and contamination ended. He, therefore altered his original belief and concluded that putrid matter derived alike from cadavers and living organisms caused puerperal fever. And this conviction of Semmelweiss, without essential alteration, is as true today as when it was first promulgated; the basic principle remains; the explanation alone has been changed.

It is interesting to note that the new hypothesis was not without friends among the faculty of the Allgemeines Krankenhaus. Skoda, the clinician, renowned for his advocacy of auscultation and percussion in physical diagnosis; Hebra, the father of the histological school of dermatology; Rokitansky, the famous pathologist, were among the most prominent. But its adversaries soon made themselves heard. While at first Klein, chief obstetrician of the Allgemeines, would have nothing to do with the new idea, it was not long before Skoda, the most enthusiastic supporter, aroused Klein's enmity.

A description of Semmelweiss, at about this time, may not be amiss. In his naive and charming "Jugenderrinerungen eines Alten Artzes" the genial Kussmaul, who visited and worked in the Clinic for six weeks during the Fall of 1847, speaks of Semmelweiss as "somewhat above medium height, broad and strongly built, a round face with high cheek bones, high forehead, hair prematurely thin, fleshy and very dextrous hands."

In December, 1847, there appeared in *Die Zeitschrift der Kaiserlich-Königlichen Gesellschaft der Aertze zu Wien* an article by Hebra, written without the supervision or the inspiration of Semmelweiss. Unfortunately, it emphasized the rôle of "cadaveric poison" and was much misunderstood in most circles. And at this, the critical time, when he should have been most prolific and loquacious, Semmelweiss maintained a strange and inexplicable silence. He adopted peculiar tactics, to say the least, when he had his enthusiastic post-graduate students write of this new idea to their professors at home. Among the latter the reaction was not universally favorable; some misinterpreted the import of the hypothesis; others, such as Michaelis of Kiel, became very enthusiastic advocates.

In 1849 Hebra published a second paper on the subject—this time in the *Transactions of the Medical Society* and in his impetuous way compared the discovery of Semmelweiss to that of Jenner. All of which furnished material for the adversary. In the early part of that same year, Haller, the senior physician and director of the hospital, who had behind him the influence of all the members of the Staff, except those of the Obstetric Division, in preparing his report of the Allgemeines for 1848, compared the results of the Lying-in for that year with those of previous years and noted the surprising drop in mortality. Deeply impressed with the work, he urged that Semmelweiss be invited to speak before the Medical Society and the proposal was adopted in February, 1849. One month before this (January, 1849) Skoda had asked that a committee be appointed to investigate the discovery of Semmelweiss; but wires were pulled and pressure was brought to bear by Klein and his followers, and while the committee was named it never met. Klein's ill-will and enmity was again evidenced when Semmelweiss upon the expiration of his two-year term (March 1, 1849) asked for an extension of the period and was refused. That similar requests of both his predecessor and successor were granted was more than coincidence. There can be little doubt that political partnership also played quite a part in the case. For the year 1848 had been one of protest in Europe. Hungary had risen in revolt against Austria, and fired by patriotism Semmelweiss had joined the "Academic Legion." Some of his biographers delight in recounting how, dressed in his uniform, he attended Frau Hebra in her confinement. On his return to Vienna he found himself a Liberal in a strong conservative camp and the denial of his petition for an extension of his term as assistant in the Clinic is not surprising. He then made application for the position of Privat-Docent in midwifery, but received little or no consideration. During the months his application remained unanswered, Semmelweiss became affiliated with two notable societies. In June, 1849, he joined the Vienna Medical Society and in October of the same year, as the result of Skoda's address before the Vienna Academy of Science, Semmelweiss became a member of that illustrious organization. The Academy subscribed a "sum of money" to enable him to continue his experiments, but strange as it may seem, Semmelweiss refused the contribution with the statement that the clinical evidence was, or should be, quite sufficient.

Eighteen hundred and fifty marked the turning point in his career. Early in that year (February) he again sent in a petition for an extension of his term as assistant, but was not recognized. Several papers of importance appeared in the same year. Before the May meeting of the Medical Society of Vienna, he pointed out that during the time of Klein's predecessor (Professor Boer) there had been no epidemics of puerperal fever in the Clinic, and for the first time mentioned the dangers of unclean utensils, soiled instruments and of dirty fingers. In the June meeting Semmelweiss not only replied to the adverse criticisms of Seyfert, Scanzoni and Zipfel, but stressed, for the first time the necessity of cleanliness in gynecological work. His name did not appear on the July program of the society, but men such as Chiari, Arneth, Helm and Rokitansky took up the cause and his work. And then in October, 1850, the blow fell! After having waited nineteen months Semmelweiss received the appointment as Privat-Docent of theoretic midwifery *with restriction to the use of the phantom in teaching*. It was the last straw. Grieved, soul-sick, insulted, weary, hopelessly weary, crushed, Ignaz Philip Semmelweiss, without a word of explanation or farewell to friend or foe, left Vienna and went to Buda-Pesth, an embittered, disappointed man. Behind him he left a host of exulting enemies and a few more than offended friends. To Skoda, for example, Semmelweiss ceased to exist.

Only the student of the history of that period can properly realize the abject abasement of Hungary in 1850. The combined forces of Russia and Austria had been necessary to crush the uprising under Kossuth and bitterly was that nation made to atone for her audacity. It would seem that any project tending to help that country, any policy tending to elevate its status was summarily rejected because of the benefit that might accrue, first by the Russians who lorded over the land from October, 1849, to July, 1850, and then by the Imperial Council (1851–1860) subordinate only to the Emperor of Austria. The medical school of the University of Pesth was maintaining a precarious existence; the medical journal had ceased publication; the Medical Society of Pesth was permitted to meet only under rigid surveillance of the police; the Academy of Science had been closed and its sessions were prohibited.

To this state and city did Semmelweiss return after an absence of six years. Both his mother and his father were dead. Only one brother, a minister of the gospel, and a married sister were in Pesth. His other brothers were refugees in a strange land. After a few months' residence in the city, Semmelweiss became (unpaid) honorary senior physician and took charge of the obstetric clinic of St. Rochus, May 20, 1851. The lying-in division of St. Rochus, the municipal hospital of the commune of Pesth, was open only those two months of the year that the University Clinic was closed. The maternity section was under the direction of the chief surgeon and it was the rule, rather than the exception, to have him visit the surgical cases and then walk the lying-in wards. He also performed many autopsies. And he went from one duty to the other with no more than the mechanical washing of the hands. Semmelweiss superintended the clinic with his usual exacting attention to details and during the first years of his service attended 933 women, eight of whom died of puerperal fever, a mortality of 0.85 per cent. As he was busied in St. Rochus but two months of each year, he succeeded in establishing a very good private practice, the income of which was very welcome, because of the financial reverses due to the rebellion. In 1858, Klein, Semmelweiss's evil genius died and for a time Semmelweiss had hopes of being called to fill the chair, but Carl Braun, one of the opponents, received the call and Semmelweiss resolved to stay in Hungary and serve his countrymen henceforth, a resolution earnestly made and faithfully kept as is evidenced by his refusal of a call as professor of obstetrics and gynecology to the University of Zurich a short time later.

Chief among the Semmelweiss opponents in Pesth was Professor Birly, head of the University Obstetrical Staff; sudden death removed him early in 1855 and in June of that same year Semmelweiss took his position as professor of theoretical and practical midwifery in the University. Conditions, however, were appalling. Very few beds were available; patients were rarely admitted before they were in labor and were usually discharged on the ninth or tenth day to provide room. The small rooms and overcrowded wards, devoted to obstetrics, overlooked the cemetery and the fumes from privies and open sewers, directly under the windows, pervaded the air and added to the loathesomeness of the place. Because of his strictness and rigid adherence to every detail, the staff was both unfriendly and disloyal. A parsimonious government doled out insufficient supplies and funds; a petty minded Stattshaltereirat (governor), von Tandler by name, did all he could to encourage those about Semmelweiss to bring to him reports and gossip of all kinds. There were no lecture halls of any kind and classes were held in the corridors or wherever there was sufficient room to hold the medical students, bored and not interested, as no examinations were required, and the illiterate midwives, about one hundred and twenty in all, who stood or sat where they could find room.

He lectured in Hungarian, albeit with a peculiar accent, a fact not to be used as proof of his being anything but a Hungarian, when it is recollected that not a few "Wiener Kinder" address their classes in a tongue whose solecisms and pronunciation would shame a Hanover cab-driver.

But in the face of all this, of the 514 cases treated only two developed puerperal fever and died, *a mortality of* 0.39 *per cent*, during the first year (1855–1856). And while the next year was one of trial and tribulation, it furnished excellent proof of the truth of his contention. Of the 440 cases seen, eighteen died within a short time of one another, of puerperal fever. But Semmelweiss found that a nurse, trained in his methods, had failed to change the foul and dirty sheets of the beds and that a midwife detailed to look after two cases of gangrene of the genitalia and to approach no other cases, had deliberately examined a patient immediately after receiving orders.

In 1856 better judgment began to make its influence felt and Austria granted an amnesty. Conditions began to improve almost at once in Hungarian medical affairs. The Hungarian medical weekly *Orvosi Hetilap* made its first appearance in June, 1857, with Semmelweiss's friend, Markusorszky, as editor, Semmelweiss not only read several papers before the Society, but was also a contributor to the weekly.

In June of that same year (1857) Semmelweiss and Marie Weidenhofer were married. The eighteen-year-old bride was also the descendant of one of those German families which were transplanted in Hungary to introduce Teutonic ideals and supplant the national spirit, but which also had been absorbed and regenerated. Two unfortunate children were born; the first died of hydrocephalus within forty-eight hours of its birth in 1858, while peritonitis carried off the second at the age of four months in March, 1860.

Urged by the misapprehension of his theory by some of his friends, who unduly stressed "cadaveric poison," and stung by the misstatements, and worse, of his opponents, especially Braun, Semmelweiss determined in 1857 to write a book. He was intimately acquainted with the literature dealing with puerperal fever, especially that of the United Kingdom. Parts of the book appeared during the course of preparation in the *Orvosi Hetilap* but the greater part of "Die Aetiologie" was written in German. In addition to attending to all his regular duties, statistics were compiled, letters were written to teachers of obstetrics all over Europe, data was assembled, work went steadily forward, and the book was finally ready in October, 1860. "Die Aetiologie der Begriff und die Prophylaxis des Kindbettfiebers" is one of the epoch-making books of medical literature, little read because of its lack of literary style and now little referred to because of the universal acceptance of the ideas and convictions defended. It included 543 pages, many of which were devoted to statistics. After the exhaustion of the first edition, it was out of print until the complete works of Semmelweiss were published in 1905 under the editorship of Tiberius von Gyory. "The Import of Puerperal Fever" fills about twelve pages; "The Etiology" is the most important part of the work; "Prophylaxis" makes but a short chapter; while "Opinions and Correspondence," devoted almost entirely to disputation, argumentation and controversy, constitutes the larger part of the book. Few readers of today would care to wade through the tables of statistics nor is it necessary. The array of figures assembled to prove his case is enormous, convincing, complete; one author (Fritsch) refers to them as "annihilating" but, alas, the manner of presentation is anything but a happy one, a fact that contributed not a little to the lack of popularity in the medical world. "If Semmelweiss could have written like Holmes, his 'Etiology' would have conquered Europe in twelve months." (Sinclair.) The next year (1861) he published an extremely controversial work, "Open Letters to Sundry Professors of Obstetrics," and then turning his attention to gynecology, apparently forgot all about puerperal fever. It was then that Semmelweiss popularized gynecology in Hungary, but not until 1863 did he perform the first ovariotomy done in that country. Unfortunately the patient died within forty-eight hours, but later other cases recovered and the reports thereof were embalmed in an obscure medical journal.

It was noticed in the early part of 1863, that Semmelweiss began to have alternate attacks of melancholia and excitement. The loss of his position at St. Rochus did not improve matters; he became progressively worse until on July 14, 1865, his wife sent for Markusorszky. A consultation of specialists, called in attendance advised hydrotherapy, venesection, and rest. These proving of no avail, a sad group of friends accompanying his relatives and wife left Pesth with Semmelweiss on July 31, 1865. The next day, Hebra took him to an insane asylum in Vienna, where one of the staff discovered an infection of one of the fingers of the right hand, and on August 13, 1865, Semmelweiss died. Autopsy disclosed a gangrenous wound, a perforated finger-joint, lymphangitis of the arm, metastases to the eye, pyo-pneumothorax, and an extensive organic brain lesion.

The body was first buried in Vienna, but in 1891 the remains were taken to his refuge and well-beloved city, Budapesth, where a marble statue in the southeast corner of the Elizabeth Square commemorates his life.

Little comment was made regarding his death in either Germany or Austria.

In the garden of the historic Allgemeines Krankenhaus in Vienna there is a monument dedicated by the University to the memory of this, the saddest figure in the history of modern medicine, and to those of us acquainted with the story of his life, this marble slab, with the beautiful bronze tablet fixed to one of its faces, with the man's face in bas-relief, the name "Semmelweiss" and the seated figure of a draped woman, extending her arms, as though imploring aid, seems more an expiation than a tribute.

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NINIAN PINKNEY, M.D. (1811–1877)

SURGEON UNITED STATES NAVY

By FRANK LESTER PLEADWELL, CAPTAIN, M. C., U. S. N.

WASHINGTON, D. C.

PART II*

FOLLOWING the sick leave which expired in August, 1860, Dr. Pinkney was assigned to temporary duty at the Naval Hospital in Washington. Already the conflict between the North and the South loomed as an unavoidable catastrophe, and the decision as to which side he should join confronted the doctor. Many of his connections, particularly those by marriage, were in sympathy with the South, and the doctor himself, while a strong unionist, held very moderate views on the subject of slavery. But he decided to cast his lot with the North, and afterwards never once wavered in his loyalty to the Union.

In September, 1862, just after the battle of Antietam Creek (September 17th), he visited the battlefield, and, in a letter to Mrs. Pinkney, which fortunately has survived, his impressions are recorded at some length:

> Frederick City, Sept. 23, 1862.
>
> On Friday morning I started in company with the Surg. Genl. [William Whelan or William A. Hammond], Bishop Whipple of Minnesota,[29] Inspector-General Mims of the British Army. Deputy Inspector Coolidge of our Army, and a few others. After a pleasant trip we arrived at Harrisburg, where we were detained several hours in consequence of heavy trains of volunteers destined for the field of battle. We were delighted to witness so fine a body of men in good spirits and anxious to repel the invaders. Our train reached Chambersburg at night and we were hospitably entertained by Mr. Kennedy. At daylight we started in Mr. Kennedy's private carriages for Hagerstown and arrived there at 8 a. m. After breakfast we proceeded rapidly for Sharpsburg and reached there at 12. On Sunday morning we paid a visit to Genl. McClellan's camp, and had the great pleasure of a personal interview with him in his private tent. Our interview was truly pleasing and we were all cordially received. The General was the picture of health and in fine spirits. He conversed unreservedly and we were struck with the modesty of the man. There was nothing like boasting or arrogance in his manner. He was simplicity itself and the secret of his commanding influence over his men was thus readily understood. No general ever held so strong a hold upon the affections of the soldiery. He is idolized by them. We asked the General if the Confederates fought well. His reply was that the battle [Antietam] was the closest contested one ever fought on this continent; that the rebels fought with the greatest bravery; the number engaged about 150,000 on their side, and the same on ours. The loss in killed and wounded on both sides about 12,000 each. He showed us 16 colors, which he had taken, besides which there were some 15 more not yet in his possession; 15 cannon and 25,000 stands of arms. Upon being interrogated as to cannon and colors he lost, he replied, *not one.*
>
> Upon leaving the General's quarters, which were of the simplest kind, no ostentation whatever, we mounted horses and rode on the battle field. The scene of battle was just about Sharpsburg.

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General Lee had his headquarters in Sharpsburg in a tower where he could observe the movements of the enemy during the engagement. McClellan was on a slight elevation in a valley skirted by rising hills. The rebels were posted in the hills which were near thick woods. The fight was one of muskets and the artillery merely accessory. They attempted three times to break our center and failed. Jackson was in the thickest of the fight and yet he escaped injury. When the battle opened the two parties did not discharge their muskets until within 30 feet of each other. The firing continued incessantly for 14 hours on Wednesday (the Waterloo battle of the union). I passed over the commanding position of the rebel army. It was a few hundred feet in front of a dense forest. Between the rebels and our army a road passed. The two lines of fences were riddled with shot. The sight was terrible. Here and there were dead Confederates. Hundreds of caps were lying here and and there pierced by balls, and the insides covered by brains and hair. The most horrible sight I witnessed was that of a Confederate whose skull had been pierced by a shell and bursting inside, tore all of the top and scattered all the brains. Here and there we would meet with one whose head had been carried off by a cannon ball; others were seated about with two legs off. The hottest part of the fight was in a corn-field; not a stock of it was standing; it was literally mowed down.

The Confederates had the strongest positions and this victory (though not a complete sweep) is a great one. It has driven the army from Maryland, and has left us in a happy and peaceful condition. It is said by persons living in Sharpsburg that the Confederate general officers were very angry with their reception in Maryland; that they had at least a barrel of letters from the secessionists promising them millions of money and 30,000 men. In consequence of this they crossed the Potomac and for the first time met with disaster. The dead on the battlefield are buried in large pits and the horses are burnt up.

After visiting the battle-field we made an inspection of the hospitals. I was struck with one thing very forcibly. It was this, not a wounded man uttered a murmur or complaint. It mattered not what the degree of injury, all had a pleasant smile on. The mention of McClellan's name seemed to gratify the poor fellows more than anything else.

On Monday afternoon we left Sharpsburg and proceeded to Frederick with Dr. Steiner[30] (an old friend of mine) and on our way stopped at the villages where the wounded were. When we reached the South Mountain, where the battle of Sunday was fought, we stopped and had our lunch. At 8 at night we entered Frederick and are the guests of Dr. Steiner. This morning we visited all the hospitals, where there are 4000 sick and wounded.

It is very amusing to hear the remarks of the wounded. One poor fellow who was severely wounded in the neck told us that he went into battle with 47 cartridges, and after firing 46, he was beading a rebel with the last one when the devil brought him down.

The Bishop of Minnesota is a delightful companion and a talented man. He received a beautiful letter of invitation from the General to perform divine service in his camp on Sunday evening. I saw the letter and will give you an extract of one sentence: "I for one attribute this grand success to Almighty God and to Him alone!" He told the Bishop that in the darkest time of his troubles he felt tranquil because he had the consciousness of having done all he could; that he was prepared to die when it pleased the Almighty to so desire it; that his firm reliance was on Him, and that he offered up prayers night and morning to direct his course.

I was pleased to hear this because the general impression has been that he was an atheist.

We leave for Washington at 7 in the morning. Love to daughter.

When McClellan was removed from his command some six weeks later the doctor was most indignant, and in his letters to Mrs. Pinkney defended the general from what he considered most unjust aspersions on his character and ability. Even in succeeding years, the doctor never lost an opportunity to come to the defence of his hero, whose faults he never admitted. Let us read his views on this subject:

U. S. Naval Hospital,
Washington, D. C.
Nov. 11, 1862.

My dearest Mary:

I suppose you have heard of the removal of Genl. McClellan from the Command of the Army of the Potomac. It is just what I expected and predicted. A greater outrage was never perpetrated in the history of the world. But for his consummate generalship Maryland would have become the battle-field and the north would have been invaded.

This executive movement was doubtless made as a rebuke to the anti-radical movement at the recent elections. If the leaders of that conservative party have the least nerve they will at once demand the restoration of McClellan, and if refused they have only to escort him to the Army of the Potomac and the Army will rally around him. He is the idol of the Army, and the day is not distant when the present administration will have reason to regret this unauthorized invasion of the great General's rights. I am too indignant to write at greater length, and I only wish I occupied a political position to denounce the infamy of the act.

Genl. Hooker left here yesterday to take the field in command of a corps, but in my judgment destined for the supreme command of the Army of the Potomac. He is a gentleman in every sense of the word, and a brave man and an accomplished general. I am happy to say upon the best evidence, that he is sound on the slavery question. I *know this* to be so, and I am glad of it, because I am a strong personal friend of his.

In a few days I will send you some money. Send to the boat on Saturday and you will receive a basket of things. Some of your butter I have sold at 45 cts. There was a difference in it. If you could have a tin full (40 lbs.) when I come over I can dispose of it at 80 cts. Love to daughter.

Ever your aff. husband,
N. P.

In December, 1862, Dr. Pinkney was detached from the hospital in Washington, ordered to Cairo, Illinois, there to report to Acting Rear-Admiral David D. Porter, as Surgeon of the Fleet to the Mississippi Squadron. On December 30th, arriving at Cairo, then the squadron headquarters, Admiral Porter being temporarily absent we reported to Fleet Captain A. M. Pennock. Thus was initiated what was to be the doctor's most active period of duty in the Civil War, and one that won for him a well-deserved reputation for efficiency.

With Admiral Porter, the commander of the squadron, he formed a friendship which, with one small interruption, was to be lifelong.

Dr. Pinkney was assigned to the flagship *Blackhawk*, but, with the Admiral's approval, soon went to live on board the Hospital Ship *Red Rover*. This move away from the flagship, innocent enough in its significance at the time of its occurrence, was to have an unfortunate sequel later, when it formed the basis of the rejection of the doctor's claim to prize money.

The *Red Rover* has a claim for being one of the first, if not the first hospital ship in government service.

When Island No. 10 was captured on April 7, 1862, several Confederate boats were taken. Among them was the *Red Rover*, an old side-wheel steamer which had been purchased by the Confederates in New Orleans for $30,000 the previous November. A shell had gone through her decks and bottom, but she was repaired at Cairo, and fitted up as a hospital boat by Quartermaster George M. Wise. The Western Sanitary Commission contributed $3500 for this purpose. Dr. George M. Bixby of Cairo was appointed assistant surgeon and placed in charge of the medical administration of the ship. Strange to say the first serious cases placed on board were those of the commander and men of the gunboat *Mound City*, who had been severely scalded when the boiler was pierced by a shell in the attack on some Confederate batteries. This was the gunboat that had taken possession of the *Red Rover* when she was abandoned at Island No. 10, a little more than two months previously.

The *Red Rover* was a veritable floating palace for the days of '61, with bathrooms, a laundry, an elevator between decks, an operating room, two kitchens and possessing wide decks and roomy cabins. Even the windows were screened with gauze to keep out flies and mosquitoes. The advantages of treating the sick and wounded of the squadron in a floating hospital rather than in a camp on shore were very great. A contemporary account of the activities of the ship states:

> Out on the bosom of the river, the fever-stricken men on the shady decks grasped that chance of life which would have been denied them tossing in tents on shore, where the beating sun by day and the miasm from the bottom lands by night, coupled with imperfect drainage, made recovery almost impossible.

The titular commander of the *Red Rover* was Acting Master W. R. Welles, but the dominating, all-pervading spirit controlling the ship was Ninian Pinkney. The vessel, her operation, proper equipment, and professional readiness became his special hobby and pride, shared only a little later with Hospital Pinkney. There is a story that when he had developed the ship to the highest attainable state of efficiency and finish, he sighed because she had no distinctive pennant nor any guns.

The Admiral hearing of this embraced the opportunity one day when Dr. Pinkney was away in a neighboring village making a speech, to have a wooden gun fabricated, painted black and mounted in the bow of the *Red Rover*. When the doctor returned he was taken forward ceremoniously and the gun formally and fittingly unveiled in his presence. Until the matter was revealed as a practical joke, he evinced great pleasure in the acquisition.[31]

Admiral Porter's own account of this incident is as follows:

> On my arrival at Mound City, I found the place under water, owing to a rise in the Mississippi and its tributaries, and we might truly be said to live among the trees.
>
> Quite a controversy was prevailing with regard to rank between the officers of the line and staff, and Captain Pennock, chief of staff, had his hands full in trying to reconcile the numerous difficulties and misunderstandings. In fact, I found that I had arrived just in time to prevent a regular row at the station.
>
> The surgeon of the fleet, Dr. P., was

one of the cleverest of men personally and professionally, and afforded a fresh illustration of the old saying that the most valuable goods are generally put up in the smallest packages. The fleet-surgeon was of a social disposition, and a favorite with everybody, but woe to any one who ran counter to him on the subject of rank, or invaded what he considered his rights. He would get out his brace of Derringers, and whoever had affronted him must make the *amende honorable* or fight.

I had fitted up a large steamboat, captured from the enemy, as a hospital-ship to follow the squadron on the eve of a battle and take on board the wounded. The Red Rover was fitted with every comfort, and poor Jack, when sick and wounded, was cared for in a style never before dreamed of in the navy. All these arrangements were made under the supervision of the fleet-surgeon, who had full charge of the vessel when completed, but at the same time she had a commanding officer, an old steamboat man who maintained discipline among the crew.

I had been intimate with Dr. P. from the time when I was a youngster, and he took advantage of this intimacy to come to me at all hours with complaints, and if I did not succeed in pacifying him in one way, I usually did in another.

One day the doctor came to me. "Admiral," said he, "these fellows around here whom I rank all to pieces are running their rigs on me about my command, and laughing at me because I can't wear a pennant. Now, sir, I want you to give me a *flag* to wear. I am next in rank to you, and I think it hard I should be ridiculed by these youngsters."

"Why, Doctor," I replied, "that would be an unheard-of thing to give the fleet-surgeon a flag; as it is, you are enjoying unusual authority, being actually in command of a vessel of war, for the captain of the Red Rover is directed to obey all your commands, notwithstanding the Regulations of the Navy provide that medical officers shall exercise no military authority. If I give you a flag, the line officers will think I have gone crazy."

"Oh, no, Admiral," said the doctor, "if *you* grant my request no one will think anything of it. It will increase my prestige. You know this is a peculiar kind of a service; give me a flag, and my happiness will be complete."

"Well, Doctor," I said, "I will think about it."

"Now there's another matter, Admiral," said the doctor; "I think the Red Rover ought to have a gun to protect herself in case of attack."

"But," I rejoined, "hospital vessels are held sacred in all civilized countries, and no one will trouble you; besides, the Mississippi is open its whole length, and there are no guerrillas along the banks."

"Yes, sir," replied the doctor, "but I might want to fire a signal-gun, and I might as well carry a thirty-pounder so that I can be ready to fight and make signals too."

"Well, I will consider the matter," I said, and the little doctor went off delighted.

In three days I had a flag of yellow bunting with an anchor in the center for the hospital ship, to be carried at the middle pole, and a thirty-pounder rifle for the bow.

The doctor was delighted when he went on deck one morning and found his flag streaming from the pole, while the stars and stripes floated at the stern and the jack ornamented the bow. He immediately put on his full-dress coat and called upon me to thank me, little dreaming that his thirty-pounder rifle was made of wood.

The doctor commenced immediately to claim increased rank, and for the next two weeks there was a constant controversy between him and the commanding officers of the gun-boats.

Although these difficulties were not brought officially before me, yet I heard of them, and was thinking of some way to remedy them, when an amusing circumstance occurred which brought the fleet-surgeon down from his high horse.

One day the doctor dined with me, and, as he loved his glass of wine, he was feeling very dignified when he got up to go on board his vessel, for the regulations required that no one should be absent from his command after sunset.

As the fleet-surgeon passed over the side the sentry presented arms, the officer of the deck touched his hat, and the doctor straightened up with the consciousness that he was now a person of increased importance.

As he walked up the levee he met a sailor who had evidently been indulging in the flowing bowl, for he pitched about like a ship in a gale of wind and took up the whole of the roadway, finally running afoul of the little doctor, which brought them both up "all standing," as the nautical phrase is.

"Whax the mazzer with you?" said the sailor; "ain't you got nary pilot aboard?"

"What's the matter with you?" roared the doctor: "can't you see where you are going?"

"Yes," replied the man, "see well 'nuff, an', d—n it, you get out of my way or I'll knock hole 'tween wind and wasser."

"Why don't you touch your hat to me, you scoundrel?" said the doctor.

"Touch my hat to you?" he said; "wha' for?"

"Don't you see my uniform? don't you know who I am?"

"No, my little man," said the sailor; "who the devil are you anyhow?"

"I am the fleet-surgeon of the Mississippi squadron!"

"O thunder!" exclaimed the other; "well, little fellow, you've got a good berth an' you'd better hole on to it; but I'm a huckleberry above that persimmon, 'cause I'm the chief cook of the Mississippi Squadron, an' you can't come any of yer chief surgeon over me," and with that he staggered off, grumbling, "Chief surgeon, indeed, expectin' chief cook touch hat to him—whas the world comin' to?"

The doctor gazed on the fellow as he tumbled on board the flag-ship, and if he had had one of his Derringers handy I fear it would have been all up with the chief cook; but, as he hadn't, he returned to his own vessel a wiser man. He had eaten too many of the chief cook's dinners not to know the importance of that functionary, so he didn't mention the occurrence.

But there is always some one around to pick up a good joke and tell it, so I was soon informed of what had happened.

Next day, when several officers were dining with me, among them Dr. P——, I told the story of the chief surgeon and the chief cook, and no one laughed heartier than the doctor. From that time forth he was less exacting on the subject of rank, though occasionally he would talk of using his Derringers.

The doctor was a strong Democrat and a great politician, though there was not a more loyal officer in the service. He claimed that there were as many Democrats as Republicans in both the army and the navy, in which I believe he was not far out of the way. In fact, many persons stigmatized as "Copperheads[32] during the war were really opposed to the Rebellion, yet such was the morbid condition of the public mind that neither party could see any virtue in the other, and the wonder is that the civil war was ever terminated until, like the Kilkenny cats, both parties had been devoured."

In addition to the hospital ship, the Navy had a hospital of minor importance at Mound City, on the Ohio River, a few miles above its junction with the Mississippi, which had been authorized by Secretary Gideon Welles on September 29, 1862. These hospital facilities proving insufficient, on February 23, 1863, the Surgeon of the Fleet received the following order from Admiral Porter:

Proceed to Memphis in the "Tyler" and take such steps as you may think advisable to secure good hospitals for the use of our sick and wounded. While consulting the interests of the travelling public, [the seizure of a hotel was contemplated] recollect that the main consideration is the comfort of those brave fellows who are fighting for this Union.

The officer in charge of the Yard at Memphis will give you all assistance in obtaining accommodations. The authority given you by Genl. Grant will much facilitate your operations.

In conformity with these orders the Commercial Hotel at Memphis was taken over, and steps initiated to transform it into a hospital. Dr. Pinkney's own account of this operation is given in a letter to his wife:

U. S. Hospital Ship "Red Rover,"
Memphis, Tenn., April 2, 1863.

My dearest Mary:

I arrived here two weeks ago, and have been actively engaged in arranging my Hospital. The work progresses finely and I hope to be able to complete it during this month.

It will be a perfect affair and I think will far surpass the Army Hospitals here. The building was originally an hotel, and is admirably located. It fronts on the water and is on elevated ground.

The location is healthy and Dr. Grier is domiciled in it in charge of the sick, but the arrangements will remain in my hands until the work is thoroughly finished. The Admiral has empowered me to exercise my own judgment and consult no one. I will give you an idea of the character of the building. The main entrance is on a fine street, called Jefferson Street. I have divided the lower part so as to give me a reception room for the sick, where the names are registered; one for the Paymaster's office; one for the Med. officers to transact their business; one for the Hospital Std., [and] one as a post office. On this, the ground floor, there are also a Dispensary, Barbers Shop, places for hammocks and bags of the sick men. This is all nicely fitted up and most of the rooms papered. There is a fine wide stairway to the second floor. On the 2nd and 3rd floors which front on different streets, there are 30 rooms . . . There are 16 wards capable of accommodating 300 . . . the other two rooms for office and issuing rooms for Fleet Surgeons supplies for vessels of the squadron . . .

I expect Whelan [the Surgeon-General] will be taken by surprise when he gets a correct account of it. He has no idea of it, nor will he have until it is finished. When I took charge here the squadron consisted of 30 vessels. It now numbers 80, all of which I have to keep supplied with medicines, &c. There was a deficiency of everything, and all of the outfits had to be obtained from the Army. This did not suit my idea, and I at once made out a requisition amply large for all emergencies. The medical corps consisted of 22. I have increased it to 56 . . . I have a large issuing room on the Red Rover. I am engaged from early in the morning until late at night. The only perplexing thing is to get the Dr's to make their returns correct. You would be amused to see some of them. I have full military authority over all the medical officers, and do what I please. I can safely say that I manage them in a manner to astonish everybody. They are all happy and contented. I am in excellent health. The Red Rover is here to land her sick, and I intend to have her painted and put in grand style. I expect you and daughter will come out here to see me. When Vicksburg falls, *which will be soon*, I expect to be at Memphis a great deal, as the Admiral will make it his headquarters. I shall leave for Cairo on tomorrow to be absent a few days. Love to all.

The degree of autonomy which Admiral Porter saw fit to yield to Dr. Pinkney as Surgeon of the Fleet, however satisfactory it proved to him, to the squadron and to the doctor, evidently was thought injudicious by the Navy Department, and from the following letter it is plain that an attempt was made from Washington to restrict his activities, and require him to live on the flagship, with slight success, as later developments will show:

Mississippi Squadron,
Yazoo River, March 30, 1863.

Sir:

Your communication in relation to the Fleet Surgeon accompanying the flagship has been received and will be conformed to. Surgeon Pinkney owing to the shortage of Asst. Surgeons has been temporarily employed on board the Hospital Ship, where he has been of great service in organizing his department. His presence has been absolutely necessary there, many cases occurring where his great experience as a surgeon enabled him to save life in more than one instance. The Hospital Ship always accompanies the Flagship and the Fleet Surgeon has always been within a moment's call. *If the Department feels any uneasiness about the little peculiarities of the Fleet Surgeon,*[33] they need not do so any longer, for a more zealous devoted officer to the profession, and to the Country, does not exist anywhere.

I remain, very respectfully,
Your Obt. Servt.
David D. Porter.
Act. Rear Admiral,
Comdg. Miss. Squad.

Hon. Gideon Welles,
Secretary of the Navy,
Washington, D. C.

Since, for a number of months, the doctor's letters to his wife discuss the military situation in the upper Mississippi; it will be advantageous to refer briefly to this subject.

The fall of Island No. 10, on April 6, 1862, had enabled the Union forces to control the river as far south as Memphis. Farragut had passed New Orleans on April 24, and soon after that date Porter ran by the celebrated batteries of Vicksburg, so that the Mississippi was now open throughout its course, with the exception of about 100 miles between Vicksburg and Port Hudson. The great objective from this time on was the reduction of Vicksburg, and this proved to be a difficult military problem.

In the Spring of 1863, with Porter's assistance, Grant made his spectacular movement to the rear of Vicksburg, and forced Pemberton within the fortifications. The operations now took on the character of a siege.

This constituted the general situation of affairs when the doctor began to write his letters, and we shall have cause to wonder as we read them, with their wealth of detail about military operations, how they managed to pass the censor, if there was one in those days.

In the letter first given the doctor endeavored to describe the Yazoo exploit projected by Admiral Porter, in conjunction with General Sherman, in an effort to contribute to the reduction of Vicksburg:[34]

Office, Mississippi Squadron,
Cairo, Ill.
March 29, 1863.

My dearest Mary:

I enclose a rough map of the position of our Fleet and Army operating against Vicksburg. It will serve to give you some idea of the matter. I will endeavor however to explain it more fully. The object of the Admiral is to pass into the Yazoo above Hayne's Bluff. Here there is a heavily fortified point to pass. This bluff is seven miles from Vicksburg and in its rear. This once taken, Vicksburg must fall. In order therefore to take this fortification the Admiral has devised a plan by which he can get above the battery, without having to pass in front of it, and thereby be exposed to its galling fire. The Mississippi is crossed by the Yazoo at nearly right angles; our fleet was stationed off the mouth of the Yazoo, and the Admiral with his ironclads entered Steele Bayou. He had to pass into Deer Creek, then into Little Sunflower, then into Big Sunflower, and this brings him into the Yazoo above Hayne's Bluff battery. If he succeeds in getting his vessels this far, he can attack the fortification and doubtless will take it.

Bayous are creeks which diverge from the Yazoo and then enter it again. The water is very shallow and heretofore nothing but small vessels of very light draft have passed them. The Confederates never dreamed of an attack in this way. The Admiral runs this risk in attempting this strategic movement; if the river falls before he can reduce the fort, he will be caught in a complete nett. [*sic*]. No supplies could reach him. He is a shrewd man and no doubt has considered carefully all the difficulties. If this fails there is no probability of the fall of Vicksburg; for it is enormously fortified and is heavily garrisoned. The Army is not equal to the occasion. It rests with the Naval Admiral to reduce Vicksburg; if he cannot succeed in the scheme he has entered upon there is no hope of success from any other quarter . . .

In a letter dated April 6, he says:

The expedition up the Yazoo . . . though not successful, was a wonderful feat. It took the enemy by surprise; they never dreamed that any man however bold would have ventured on such a task. He actually carried his iron clads through passes so narrow that the sides of the vessels cut into the trees. He penetrated 120 miles through lakes, bayous, and creeks, some of which were not 50 feet wide, and at the time when he was compelled to abandon the project he was within sight of the Yazoo. The Army failed to keep up with the boats, and the enemy had 400 negroes employed in felling trees in his front and rear so as to impede his progress. Porter's retreat was not the result of a defeat; it was a masterly conducted affair, and he succeeded in rejoining his squadron. For 100 miles he had to steam backwards, there not being sufficient room to turn the vessels.

Had he succeeded in this bold enterprise he would have sealed the fate of Vicksburg.

I received a very kind letter from Admiral [L.M.] Goldsborough, in which he states that Charleston is soon to be attacked. If the Navy Dept. use their heavy vessels and a large land force cooperates, the line of attack being in front and rear, Charleston must fall. The vessels however must be brought close up to the Fort so as to render their cannonry effective. It is perfect folly to engage land batteries at long range; close quarters should be the order of the day. This places both on more equal footing. The arrival of Farragut off Red River is an important event. It cuts off the enemy's supplies and will cripple him at Vicksburg. If we had such an Army as that organized by Mac [McClellan] and to be led by such a man, I should regard a combined attack on Vicksburg as certain in its result. But as matters now stand I am not so sanguine. It is no use for the Navy to attack unless ably and effectively sustained by the land forces. We can dislodge them from their batteries, but no sooner is this done than the enemy is enabled to reoccupy them. The lines of policy now is to operate with the vessels so as to cripple them in their supplies and make a strong and vigorous attack and drive them out . . .

The elation and pride reflected in his next letter are only too evident. The reasons will appear as we read it:

U. S. Hospital Ship Red Rover,
Memphis, Tenn.,
May 19, 1863.

My dearest Mary:

I have just received an order from Admiral Porter to proceed with [out] delay with the "Red Rover" and join him off the Yazoo. He has paid me a high compliment in naming the Hospital at Memphis after me. No such compliment has ever been bestowed upon a medical officer before; and coming from such a distinguished source is greatly to be prized.

Copy of Admiral Porter's Order.

Flag Ship Blackhawk,
May 15, 1863.

Sir:

The Admiral directs me to inform you that hereafter the hospital at Memphis will be known as "Hospital Pinkney."

Very respectfully,
Yr. Obt. Servt.
K. R. Breese
Lt.-Comdr. and Senior Officer.
Comdg. Blackhawk.

Fleet Surgeon N. Pinkney,
Hospital Pinkney,
Memphis, Tenn.

The next letter, written from the *Red Rover*, off the Yazoo, on May 30, again reviews the military situation. He says:

Vicksburg holds out beyond precedent, and yet I cannot see how we can fail to take it. I must confess however that I do not like the slow process of taking it by siege. It enables reinforcements to come up, and there is Joe Johnston to lead them and his talent is of the very first order. Grant is a bold fighter and was never known to give up. He is the most desperate fighter we have and I think will prove a good general. Sherman (second in command) is a splendid fellow, talented and skilful as a leader. McClernand (3rd in command) is a rank abolitionist, and has very little military talent. There are about 20,000 troops in defense of the batteries around Vicksburg. Occasionally a deserter or so comes into our lines and the information obtained sustains the correct views of the estimated number of troops as above cited. We have 50,000 troops, and have possession of the approaches. In fact we have surrounded their inner fortifications. Some of our batteries are only 2500 yards from theirs and our sharpshooters only 30 yards. There are a number of families in Vicksburg and they live in caves. The constant shelling from our mortars harasses them greatly. The Confederates have about 30 days half rations for their soldiers, and are expecting to hold out until re-inforcements arrive. They are determined to fight it out at all hazards. It is wonderful how they hold out against such odds. History presents no such precedent. I have heard a great deal about their being half starved. The prisoners captured by us furnish no such evidence. They are a remarkably good looking set of men and are healthy. They are deficient in what I should call luxuries, and not the actual necessities of life.

The Admiral flies around in a little tug, while the balls are falling like hail around him. He is a splendid man and I think when you see him you will agree with me. If we live through this war, I promise myself the pleasure of entertaining in style our worthy Admiral and his noble band of Captains. The latter were educated at the Naval School when I was stationed there . . .

Just think of it, 100 guns play night and day upon that city, and also our mortars. We sent the "Cincinnati" to silence a battery. She was sunk by their batteries in a few hours—a number were drowned and killed. It was a terrible . . . [The letter is incomplete.]

Red Rover, off the Yazoo,

June 1, 1863.

I accompanied the Admiral in the flagship as far as the rear guard of our Army. Then we landed and rode to Genl. Sherman's quarters. He took us to visit his works, which are enormous. We approached to within 80 yards of the enemy's largest fort. I looked through the port holes and balls passed over our heads. We walked through the line of works and for one hundred and fifty yards were exposed to the raking fire of batteries. We came off unhurt . . .

Flag Ship Blackhawk,
June 7, 1863.

This is my birthday and I am 52 years of age. I don't realize that I am so old. I feel as fresh and youthful in my feelings as I did when I was a young man. I suppose you would like to know in what way I passed the day. The Blackhawk, Flagship, was lying at anchor about four miles from Vicksburg, and the Admiral and myself were quietly looking out from her port window. A shot well-directed, struck within 150 yards of where we were and scattered the water in every direction. Its range was enormous and its direction true. The next fell a little short of us. The Black Hawk is the ship on board of which the Admiral has all his official papers, and she is not intended to be brought too closely within the range of the enemy's batteries. Of course the order was given to move her, and while underway the Admiral concluded to go as far as Milligan's Bend, some twelve miles distant, where it was reported a rebel force had attacked our forces at that point. We arrived there in an hour or so and went on shore. The night previous the Admiral had dispatched the ironclad vessel "Choctaw" to render assistance. The rebels under command of Genl. McCullough (brother of the Ben McCullough) [McCulloch] the great rebel chieftain, dashed in upon our troops (2 regiments of blacks and the rest white soldiers) and would have captured the whole Brigade but for the timely arrival of the "Choctaw." A large number of blacks were shot, most of them through the head. It was a horrid sight. After remaining a few hours we returned and anchored in the vicinity of Vicksburg. I pass a good deal of my time with the Admiral; take most of my meals with him, and have a room at my disposal in his cabin.

The enemy in Vicksburg holds out well, rather too well for us. His lines of defence are admirably selected and strongly defended. I expect we shall have hard work before it falls, and if our generals do not bring up reinforcements rapidly we may not succeed.

I should not be surprised if the greatest [battle] is yet to be fought here; and upon it depend the issue. We have a printing press on board (on a small scale), and we have started a paper. It will contain *facts not lies*, and as our Admiral is remarkable for wit and sarcasm, it will contain some amusing incidents. I will send you a prospectus and first issue. Let the Editor of the Easton Gazette see it, he may feel disposed to make extracts. You must invite our friends out (when the paper is received) and read it to them . . .

St. Louis, Mo., June 23, 1863.

My dearest Mary:

I arrived here last Tuesday and have been busily occupied in fitting out a number of vessels, and in supplying a number of others with necessary medicines. I have just completed the work and shall start for Cincinnati this afternoon. You can have no idea of this great fleet. It occupies me day and night and yet I keep quite well. I wish Vicksburg would yield. It keeps everybody in such an uncertain state in the Mississippi River. I think Grant is making a sad mistake in not at once carrying that place by assault; or surely Sherman to fight Johnston before this great general can be re-inforced.

Since the displacement of the Patriot and Genl. (G. B. McC'an.), we have had nothing to chronicle but sad defeats. I feel that this whole war has been changed from its true policy, and unless we retrace our steps and walk again in the old-trodden paths of our fathers, sad will be the future of our great and glorious Union.

Genl. Lee, I perceive, has entered Md. with 125,000 of the choicest soldiers of the Confederacy. This is bad business, unless we had old McC[lellan] to look out for us. Hooker is a mere child in the hands of such a man as Lee. It has always been a matter of utter astonishment to me that the Rebel chieftain has never attacked the capitol in its rear, I mean by the Bladensburg road. Here is our feeble point; I fear that Lee has this in view. In my opinion he will not inflict injury on Md.—it is not his policy—the fat duck is his choice later, and he is too shrewd a general and statesman not to see it. If we do not call McC. to the field without delay, I fear our capitol is at the mercy of Lee, and that it will be gobbled up. If this sad event should occur there is an end of the Union, under, at least the present administration. What a sad mistake Lincoln made when after all his protestations to the contrary, he issued an emancipation proclamation. It was the most stupid and ill-judged step possibly to be taken. It has made the South a unit and it has unquestionably divided the sentiment of the North. Besides it is perfectly preposterous, Negroes will not fight—this is so—and if they would, I am not disposed to be indebted to that class for the preservation of the Union; nor am I disposed to create an insurrection in the South. My word for it, the white man will not long battle for our great cause if his associate is to be a negro. This is natural and a fool ought to be able to see it. What I have frequently predicted will soon come to pass, secession and abolition; the real enemies of our country must be put down, peaceably if possible, forcibly if necessary. This is the only crisis which can possibly arise by which this country can be saved. I expect to have a stormy time in returning to the Admiral, but I must reach there as soon as possible.

On the fourth of July, 1863, the great struggle before Vicksburg ended by the surrender of the city, its fortress, guns, and 30,000 prisoners. Five days later Port Hudson surrendered to General Banks, and thus the river was opened to the Federal forces from New Orleans to St. Louis.

Instances of the employment of nursing sisters on naval hospital ships are very rare, but the letter about to be quoted is evidence that they were so employed on the Hospital Ship *Red Rover* in 1863:

St. Mary's, Augt. 11th, '63.

Fleet Surgeon Pinkney,
Miss. Flotilla.

Honored and Esteemed Sir:

Your favor of Augt. 5th has just been received and I hasten to inform you that I have not the slightest inclination to remove our Sisters from the Red Rover, provided they are enabled to attend Mass (as they do at present). It was deep source of regret to me when I feared we might have to do it, merely because the nature of the boat's movements would continue to prevent the fulfillment of one of our essential duties. But as this obstacle is removed, I am rejoiced to have them stay as long as their services are needed.

Permit me to make use of this occasion to thank you most cordially for your great kindness to our Sisters. Through them I have learnt to know and esteem Dr. Pinkney as one of the best and most devoted of the noble corps composing the Navy. And with these sentiments of respect and esteem, permit me to sign myself, your obedient servant and friend in behalf of the sick and suffering of the Navy.

Sister Angela of Holy Cross

Although Vicksburg had fallen, a considerable force of gunboats under Admiral Porter continued to operate in the river to prevent communication between the bodies of Confederate troops still existing, and so Dr. Pinkney's duties as Surgeon of the Fleet occupied him for nearly another year. His letters to his wife stand as the best record of this period of his career, and we cannot do better than continue to quote them:

August 22nd, 1863.

I left Memphis this morning to visit all the ships stationed between Memphis and New Orleans, in order to renew their supplies of medicines. The Red Rover I left at Memphis. My hospital at that place is conceived by all to surpass the Army hospitals. It is perfect in every respect and is gorgeously fitted up. The Admiral paid it a visit on his way to Cairo, where he now is, and expressed himself in every way pleased. The great West is proud of it and it will redound to my credit at some future day. Without this hospital, entirely my own work, the sick and wounded of the Squadron would have fared badly. I wish you could only see it . . .

I shall be delighted when this war is concluded and I can be permitted to pass a few quiet years at home. Our victories in the Western waters have been real ones and if the administration could be induced to abandon its fanatical policy one might expect an early and honorable adjustment of our difficulties. In such a case the war would soon be brought to an end. If the policy is not changed revolution in our midst stares us in the face. Nothing can avert it. The temper of our people is sorely tried by the arbitrary and unauthorized invasion of constitutional rights, and the assumption of power which must sooner or later end in the destruction of Govt.

I am delighted to see that the people are gradually having their eyes open. This is the harbinger of good. As for myself I am for the prosecution of the war solely for the purpose of restoring the constitution and the Union. If it be a war of subjugation then I am utterly opposed to it and in this respect whenever it can be fully brought out, I shall be of a party which will be a true Union party. I despise abolition and I despise secession. They both look for separation of a once happy country and nothing short of it. That both parties are destined to be foiled in their schemes I have no doubt.

Cairo, Ill., Sept. 30, '63.

I called to see the Admiral the day I arrived here, and he insisted upon my staying with him on board the Flag Ship. Of course I accepted his kind invitation. The vessel is at Mound City, seven miles from Cairo, where she is being thoroughly overhauled.

Attached to the Black Hawk is a little Tug (steam) which makes two trips daily to Cairo. This enables me to transact business with the medical officers at Cairo, and return for dinner, which is at 8 o'clock. I then pass a social and pleasant time with the Adml. He has a number of fine horses and I occasionally venture to ride one. My time passes rapidly and so far I keep well and am perfectly contented. I have a great deal to attend to in order to leave here the latter part of October. I shall have to travel at least 8000 miles and supply 95 vessels with the necessary medicines . . . I wanted to take the Red Rover, but the Adml. is afraid on account of the light stage of the water. I shall therefore be compelled to go in the Genl. Lyons; she is a fine boat and is commanded by one of the very best navigators on the Mississippi, and is a good friend of mine. [Pilot R. E. Birch?] I shall make every effort to leave about the 28th of October . . .

I am anxious to leave my affairs out here in good working order, and hope to do so.

The more I see of Western life, the more I am prepossessed in favor of western men. They are a plain honest-speaking people and rather rough; but they are free from deceit and are very kind and hospitable. I am a great favorite out here with all of them. This kind of life

> suits me, one of constant activity of body and mind.
>
> One has no time to brood over the follies of men at home who have the destinies of a great nation in their keeping. It is well it is so, for if this was different I should not feel as contented as I am. I live in the hopes of soon seeing a severe rebuke given to the radicals; and this quiets my mind.
>
> The Admi'ls. vessel will not be placed in complete order before the latter part of Nov. When finished she will be perfectly beautiful. I know nothing that can then equal her unless it be Hospital "Pinkney" at Memphis. I shall have my ship the "Red Rover" put in grand order. I have just completed a fine cabin for myself on her upper deck. There are two large bedrooms and attached to each is a dressing room. There is also a fine pantry. Besides there is a large room (parlor) nicely furnished. If Whelan [the Surgeon-General of the Navy] could see the elegance of my quarters on board and at the hospital, he would think I was aristocratic in my notions.

In another letter of the same date as the preceding one Dr. Pinkney writes about two slaves who have left his place in Maryland, and says:

> It is a great shame that while a man is devoting his best energies to the service that his property instead of being secure is actually tampered with and a policy established to render it absolutely valueless. We shall be greatly incommoded by the running away of two such valuable servants, and the effect will be to render the remainder insubordinate and insolent. Maryland will be peculiarly situated, and the emancipation of her slaves without adequate white labor will embarrass her farming interests greatly. I presume now that slaves are encouraged to leave their owners that looking to compensation many men will vote for emancipation . . . If I could have foreseen this state of things, I should never have built at Londonderry.
>
> The idea of having to leave so fine a home without some careful person to take charge of it, is a painful thing to contemplate. Is it not provoking, after paying every dollar and free of debt, we should be so situated? It is enough to disgust a man with everything around him . . .

On October 30, 1863, the doctor requested thirty days' leave, stating as a reason, "my affairs at home urgently demand my attention," and leave was granted on November 13th. It was his plan during the leave to go to Washington and render an account of his stewardship in the squadron, and then spend the balance of his time at Londonderry with his family, but no record of his doings in this interval has been found, and in fact none until August, 1864, when he wrote the following quite indignant letter to Admiral Porter, who was then at Perth Amboy, New Jersey.[35]

> U. S. Naval Rendezvous,
> Cincinnati, Ohio,
> August 10, 1864.
>
> Sir:
>
> I addressed you a communication relative to an interview which I had held with Paymaster Bleecker. At the time of writing I did not fully comprehend the official dispatches from Dr. Whelan, when called upon to reply to a requisition for $10,000. From the tenor of Dr. Whelan's reply I am not to exercise judgement in the selection of Med. Supplies; all is to be referred to the Bureau. If this is true, it is useless for me to remain any longer attached to your fleet. It would dishonor myself by doing so. I shall not act hastily in the matter . . .
>
> If I am to be fettered, which I shall soon know by the [letters?] of the Bureau, the chief of which is ignorant as a newborn babe, of the necessities of this fleet,

> then I shall quietly return and demand a full and thorough investigation as to all my official acts. I merely now allude to these things. I shall, at an early day, lay before you a thorough vindication of my course and I am prepared to fight it out, if necessary alone. No man however exalted in position shall for a moment assail me. I will meet him like a man, or fall in the attempt. Persecution I detest and it shall never deter me in what I consider to be my rightful course . . .

On August 10th, from the Rendezvous at Cincinnati, the doctor submitted a report to Admiral Porter giving the results of a recent inspection of the fleet. He states:

> I am happy to say that the vessels comprising your command have all small sick lists, which is certainly gratifying at this the most sickly season of the year. Out of the 44 vessels below Memphis, I received on board the "Red Rover" only 32 sick in all, 22 of which were from the Osage (which is, as you know, stranded on a sand bank). Five are wounded men, thus leaving only five sick from 43 vessels, most of them iron-clads.

On December 5, 1864, writing from Mound City to Mrs. Pinkney, Dr. Pinkney indicated the nature of his plans for the immediate future:

> I arrived here on the 3rd and had an interview with Admiral Lee. [Acting Rear-Admiral S. P. Lee, who had taken Porter's place.] He is a pleasant gentleman, but he is too slow for me.

On January 7, 1865, Surgeon-General Whelan stated in a letter to Dr. Pinkney that he contemplated making a visit to the Mississippi Squadron, but asserted that he could not come in time to accompany the Fleet Surgeon on his last tour of inspection. Dr. Whelan also suggested that Dr. Bradley[36] be attached to the office of Fleet Surgeon in order to become familiar with its duties, concluding his letter as follows: "The only objection is a slight delay, a consequence of little importance to an officer of your zeal and self-sacrificing spirit, where the public service is concerned."

Late in December, 1864, the Fleet Surgeon had a narrow escape from drowning. He makes no allusion to the occurrence in his letters, but it is set forth in the log of the *Red Rover*, from which the following account is abstracted:

> Mound City, Ill. Dec. 30, 1864. At 6 p.m. Fleet Surgeon Ninian Pinkney ordered his gig brought alongside. Gig alongside at 6.10. The following named persons got in: Fleet Surgeon N. Pinkney, Dr. Knight, Paym. A. W. Pearson, Mr. and Mrs. Dudley, and Letti, daughter, and the gigs crew consisting of six men and the coxswain, and proceeded down the river, destination, the Store Ship Genl. Lyons. They designing to land a little above the Lyons at the Levy [levee], but got too near the bow of the Lyons before perceiving it (the night being dark, and the current being strong, they drifted on her bow). Previous to hitting the Lyons two of the oars broke by drift [wood] leaving them almost helpless. Striking amidships on the Lyons bow, she capsized, throwing all into the river. All were rescued except the following named persons. Mr. Dudley and child, citizens, and two of the crew . . .

St. Louis, Mo., June 7, 1865.

My dear Sister, [Amelia]

This is my birthday. I am now fifty-four years old; and it is remarkable what endurance I can stand. No man living has performed the work which I have done during a period of 2½ years. I have travelled 82,000 miles; and on an average have slept not over five hours during that period. My mental and physical energies have been severely taxed, but I have never complained. I have been the medical advisor of a Fleet of 120 ships, the largest Fleet ever assembled together; and I have the consolation of knowing that by the sanitary arrangements which I introduced, there is less am't of sickness in this Fleet than in the healthiest portion of the globe with 1/3d the number of vessels. This is historic fact which one day will be acknowledged.

I desire now to get away. I am nearly worn down; and I am more disgusted than words can define. I had a splendid letter from my good friend Adml. Porter the other day. He appreciates my services; and this is honor enough for me.

I had the gratification last evening of meeting with my friend John Decker[37] . . .

The cause for the evident depression of spirits reflected in this letter is probably to be found in the fact that he had again suffered disappointment in his ambition to be Chief of the Bureau of Medicine and Surgery. The Assistant to the Bureau, Phineas J. Horwitz, who had been the "power behind the throne" there during the war, was friendly not only with Secretary, Gideon Welles, but also was a decided favorite with Congressmen. He had, therefore, received the honor of being appointed Chief of the Bureau on July 1, 1865. It was largely for Horwitz's benefit that Congress passed the law since in force which gives to the Assistant of the Bureau the highest sea pay of his grade.

What Admiral Porter thought of Horwitz's appointment and of Pinkney's services during the war, may be gathered from the following letter:

Washington, June 24th, '65.

Dear Pinkney:

I would have written to you sooner but have been waiting until I could get your wishes complied with. I had *after all* to go to Horwitz, the present *Chief* of Bureau!!! and he informs me that you would be relieved on the 15th day of July, and if it was necessary for you to come north before that time, to forward an application to the Secretary, and a leave of absence would be sent to you—the Mississippi Fleet will be broken up, and only 12 vessels be kept afloat; of course you won't want to stay under those circumstances, the glory of the Squadron all gone, and your hospital ship turned into a cotton boat. The best thing to do is to come here and make a fight for this Bureau. I write you now *confidentially*, and don't want you to hint to *any one* what I say to you. Surgeon Stephens of the Insane Asylum called on me, and we had a long talk about matters and things, and he will tell you what I said. There is a determination here to keep Horwitz at the head of the Bureau, and I think the system of putting indifferent men in high places ought to be stopped. All the line Bureaus have been brought into disrepute by the system [illegible] and they are going now to spoil the Staff Bureaus; the surgeons certainly have the influence to stop it—let them all pull together, and they will do it—pick out [illegible] one of you to take the Bureau and insist on getting him in. *You* can get it if you go to work quietly, 'tho Ruschenberger is the one the Department favors if there is to be a change. The Secretary tho will keep Horwitz there if he is not opposed. When Bridge goes out I suppose they will put in one of his *chaps*, by way of carrying out the rule—they think that no talent is necessary to carry on a Bureau, but only routine. Horwitz is a [?] and is awfully stuck up at the idea; talks patronizingly, and will soon burst with pride. Everything on the Mississippi River will be broken up, retrenchment is the order of the day, and there is in fact no further necessity of keeping longer fleets afloat. Don't show my letter to any one. I can help you in the matter in a quiet way, and with all my friendship with the Department, I think they are doing themselves injustice and will be glad to get right. Fox[38] has nothing to do with the matter. I think Faxon[39] is the man who pulls the wires. Now go to work properly, and you will put this all strait [sic]—it is a principle worth fighting for. I cannot believe that out of all the old surgeons that Whelan and Horwitz monopolize all the talent and brains. I should be glad to see you on this *Hemisphere*. With best wishes I remain,

Your sincere friend,
D. D. Porter.

Ninian Pinkney's period of service as Surgeon of the Fleet to the Mississippi Squadron terminated on July 15, 1865. It has been a notable experience, and it was appropriate that it should be closed by a commendatory letter from the Admiral then in command:

Mississippi Squadron
Flagship Tempest, Mound City,
17 July, '65.

Sir:

Surgeon N. Pinkney has served on my Fleet Staff as Fleet Surgeon of this Squadron since I assumed command of it on the 1st of Nov. last. Hospital Pinkney at Memphis has in addition to the Hospital Department of this large Squadron been under the general supervision of Dr. Pinkney.

It gives me great pleasure to report to the Department, now that this Sqadron is mostly put out of commission, and Dr. Pinkney is just detached from it, that his duties have been ably performed.

As Fleet Surgeon Dr. Pinkney has displayed great energy and judgment and administrative ability in the performance of his extensive and important duties, and I beg to leave to recommend him to the favorable consideration of the Honorable, the Secretary of the Navy.

S. P. Lee,
A. Rear Admiral.

Hon. Gideon Welles,
Secretary of the Navy.

Here is a letter to Dr. Pinkney from his successor in the Squadron, P. A. Surgeon Michael Bradley:

Red Rover, Mound City, Ill.
July 22nd, 1865.

Dear Fleet:

This being Saturday night, I will, according to promise, write what I call a general letter, that is, a composition, the sentences of which will touch upon many subjects without at all entering into the minutiae of them.

First of all I hope you arrived without detention or accident, safely and in good health, in Washington . . . Drs. Thorp, Parker, and Westfall, have been detached from the Hospital Pinkney, and gone home. Knight is keeping as quiet as a mouse; perhaps he wants to see all the sea duty he can out here, so as not to be ordered, when East, to sea; you know he has a great dislike to float on the briny deep. Your commendatory letters to the Acting Asst. Surgeons of the fleet have elicited warm encomiums from the recipients; they are loud in your praise; why should they not be? You were the only friend and benefactor they had in the fleet,—then to their panegyrics upon you, I say Amen! . . .

Now, my dear Fleet before closing, I will thank you for any information you may be able to give me relative to the successful winding up of the business of the Medical Department of the Mississippi Fleet . . .

You have my best wishes for your good health and prosperity,

Truly yours,
Bradley.

A final echo of the appreciation in which Dr. Pinkney's services were held in the Mississippi is contained in a letter from Sister Superior Angela of Saint Mary's Convent, which reached the doctor early in 1866:

Dr. Pinkney, Easton, Md.
Most Honored and Esteemed Sir,

I have just ascertained, through the

Dead letter Box, that my reply to your courteous note of June 9th, enclosing such a beautiful testimonial of friendship and esteem, was never received by you. Therefore I hasten to acknowledge at this late date my high appreciation of your exquisite favor, received through Sister Saint John, which I shall ever prize as the memento of one who holds so high a place in the esteem of all the Sisters of Holy Cross, as Fleet Surgeon on the Mississippi during the terrible National contest of the last three years. With most profound consideration of regard, I have the honor to be,

Your friend and humble servt.
Sister M. Angela.

Saint Mary's,
Notre Dame P. O. Ind.
Jany. 17th '66.

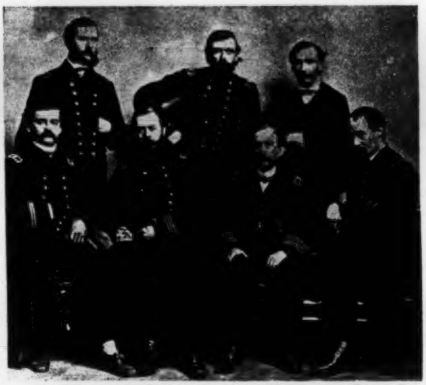

FIG. 3. MEDICAL STAFF OF THE HOSPITAL SHIP RED ROVER, MISSISSIPPI SQUADRON, 1863.

BACK ROW (STANDING): ACT. ASST. SURG. J. F. FIELD; ACTING ASST. PAY. ALEX. W. PEARSON; LAWRENCE.

FRONT ROW (SITTING): ACT. ASST. SURG. GEORGE H. BIXBY; ASST. SURGEON JAMES S. KNIGHT; SURGEON NINIAN PINKNEY; PASSED ASST. SURG. MICHAEL BRADLEY.

The action of the retiring fleet surgeon, in giving letters to the acting surgeons whom he thought deserving of them, which was commented upon so favorably in Dr. Bradley's letter, as having produced such a good effect on the morale of the recipients, was made the subject of adverse comment by the Department, and was considered to be a violation of an article of the Navy Regulations. Pinkney in his reply to the admonitory letter of the Department states:

> I had been the Surgeon of the Fleet during a period upwards of two years and a half, and on the eve of my departure, I thought that a letter of commendation might prove of service in private practice to such as in my opinion were justly entitled to it. In giving such letters it was foreign to my idea of infringing upon a rule of the Department.

And thus the incident was closed.

Another, but more poignant, disappointment growing out of his service on the Mississippi was the decision of the Department depriving him of his share of prize money. Other officers of the squadron participated in the prize money accruing from the condemnation and sale of cotton captured during the campaign, but Pinkney was excluded on a mere technical basis, although Admiral Porter came to his rescue and vigorously supported his claim. To understand the situation a little more clearly, it will be essential to quote from letters. These letters, moreover, are valuable in giving details of the doctor's duties not previously mentioned:

Easton, Md., June 1, 1866.

Sir:

I beg to leave to submit to the consideration of the Department a statement of facts upon which to base my claim to prize money due the officers and crew of the U. S. S. Black Hawk.

In obedience to orders I reported for duty as Surgeon of the Fleet to Admiral D. D. Porter . . . in January, 1863. I was directed to take charge of the wounded at Arkansas Post and proceed with them on board the Hospital Ship "Red Rover," which vessel had just been fitted out for that purpose. I was instructed to visit all vessels throughout the Fleet and see that they were supplied with all necessary articles. I was considered by the Admiral as belonging to the Black Hawk; my other duty was purely temporary. I frequently communicated with the Black Hawk and remained on board to transact business. The efficiency of the Fleet depended, in a great measure, on a well-regulated sanitary system; to effect this my time was actively engaged in visiting the vessels and supplying their wants.

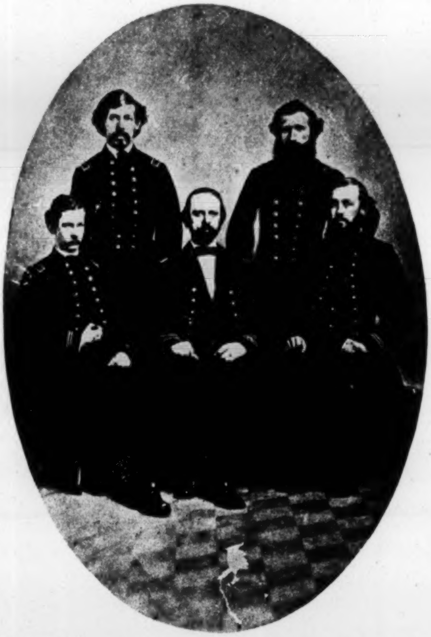

FIG. 4. MEDICAL STAFF, NAVAL HOSPITAL (PINKNEY HOSPITAL), MEMPHIS, 1863.

BACK ROW (STANDING): ACT. ASST. SURG. ABNER THORP; ACT. ASST. PAY. HUGH NOTT.

FRONT ROW (SITTING): ASST. SURG. GUS H. E. BAUMGARTEN; SURGEON WILLIAM GRIER; ACT. ASST. SURG. JOSEPH B. PARKER.

[Here he quotes the laws and regulations bearing on the subject.] . . .

The only question remaining to be disposed of is the fact that my accts. were kept on board the Red Rover. The letter of Admiral Porter, which is submitted herewith, will explain this. According to his statement my accts. were ordered to be kept on board the Flag Ship. This order was not carried into effect, and I can in no sense be responsible for this.

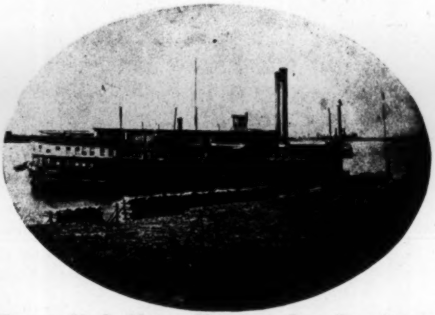

FIG. 5. U. S. NAVAL HOSPITAL SHIP RED ROVER

Admiral Porter's statement supporting Dr. Pinkney's claim, stated, among other things, the following:

> You belonged to the Black Hawk . . . You were expected at different times to visit the whole length of the Mississippi, Cumberland, and Tennessee Rivers, and you were not confined to any particular vessel . . . I do not consider that you have lost any rights by being absent temporarily from the Black Hawk and that you are entitled to any prize money for captures during your absence.

The Department however was inexorable, and rejected his claim, stating, "it would be departing too materially from the terms of the law to admit it." Dr. Pinkney was compelled to accept this decision as final, but not without much bitterness and heart-burning.

On April 24, 1866, a request which he made to the Navy Department for permission to visit Washington City from time to time, which was granted, recalls a curious regulation then in force which denied to a naval officer the privilege of visiting Washington without formal permission.

A letter from Admiral Porter to the doctor about this time reveals that he thought his own war services had received but scanty recognition. In this letter he proffered much good advice against the participation of naval officers in politics, advice which, as we shall see, was entirely lost on the doctor:

Annapolis, Md., Aug. 28, '66.

My dear Pinkney:

I received your kind letter. Your partiality makes you attach more importance to my services than they deserve.

At the same time I am quite aware that but for me [illegible] would not be as you say. I have never seen the article in the Edinburgh Review. Can you send it to me? I am glad some one is doing me justice, for both the Navy Department and the country have failed to acknowledge my services, or have done it so niggardly that I have refused to recognize their acknowledgments.

I hope the navy does me justice.[40] About the Convention, you know my sentiments, dear Pinkney; we owe our strength in the Navy to not mixing in politics. All the people who are engaged in that convention are seekers for office. Let us first see what they are going to do, and let us keep out of it if possible; we can aid the country more by abstaining from it than by joining it. We are in the position to sustain the government and that the president knows. If we did anything of the kind the Radicals (who have the power till the 4th of March) would strike a blow at the Navy which would cripple us. I don't know how I could manage to get you there as a delegate, but first think over what I say to you. You know I never go off half cocked. Spent a day or two with Grant last week, and he thinks the same as I do. Our silence is strength. The people watch our actions with much jealousy.

Yours very truly and sincerely,
David D. Porter.

Dr. Pinkney's periods of active duty after leaving the Mississippi Squadron were intermittent and temporary in character. He was on the Board of Visitors at Annapolis, then on the Board of Examiners at the same station, and finally a member of a board for special duty at Annapolis. In April, 1869, he represented the medical department of the Navy at the meeting of the American Medical Association at New Orleans, and in the following month he was ordered to proceed abroad as a delegate to represent the navy and the American Medical Association at medical congresses in London, Leeds, and Florence.

During this visit to London he became better acquainted with Sir William Fergusson, to whom he had taken a letter from the Hon. Reverdy Johnson, formerly minister to Great Britain. Fergusson was then at the head of his profession, and no doubt Dr. Pinkney had ample opportunity to see his surgical work. Bishop Pinkney makes the statement in the memoir on his brother that, "every night, and until a late hour, he [the doctor] was with pen in hand and book of reference, as regardless of the attractions of London as though he had been in a desert."

As just indicated, during his travels abroad in 1869, he was accompanied by his brother William, who had been induced by his parishioners to take a much-needed rest from his parochial duties. In Dr. Hutton's "Life of Bishop Pinkney" (p. 162) the following reference to this period occurs:

Happily this European trip was to be made in company with his brother, Surgeon Ninian Pinkney, who, as an officer of the Navy, had been with the United States Squadrons in all parts of the world. He was a most entertaining companion, full of wit and humor, with a keen observation of men and things, always knowing what to do and where to go for instruction and pleasure and travel. The two brothers, however, were not always together; for the surgeon was going abroad in an official capacity to represent the United States in certain medical conferences to be held in England and on the continent. But they contrived to arrange their movements so as to be with each other in many noted and important places. This association with his brother was also incidentally of advantage, as it led to the formation of very pleasant acquaintance with some distinguished members of the medical profession in England, by whom hospitalities were extended to the two brothers . . .

Dr. Pinkney sailed from New York in company with his brother in the steamer *Scotia* on the 21st of July, 1869. The passage across the ocean was exceedingly pleasant, without storms, accidents, or anything to endanger safety or mar the pleasure of a journey over the sea. Landing at Liverpool, after a brief sojourn to view the wonderful docks . . . the party proceeded on to London . . .

From London the brothers went to Leeds, Southampton, and York, and then to Scotland, where they visited Edinburgh and Glasgow, and saw also the famous Scottish Lochs. Leaving England for the continent on the thirty-first of August, they visited the principal cities of France, Germany, Austria, and Switzerland, and then passed into Italy. At Florence they were detained longer than elsewhere, owing to Ninian's attendance upon the medical conference then in session, where, as the accredited delegate from the American Medical Association, he addressed the Congress in a formal speech, in French, which his brother states was well received. The manuscript of this speech was evidently cherished by its author, for it was found among his papers, carefully docketed, and endorsed as having been published in the papers at Florence.

But one letter of this period has survived. However, the clergyman kept a journal[41] in which he entered his own observations and impressions, often in the most poetic language and the following brief extracts from this journal, give a summary of their movements:

> Took passage in the *Scotia*, a noble ship, commanded by one of the oldest and most skilful of English sailors . . . Sky as clear as a diamond. Hope beaming in the eyes of some; tears hanging on the eyelids of others. This going down to the sea in ships is wonderful . . . The night was surpassingly beautiful. A moonlight on the sea—such a moonlight on such a sea. The former in a full flood-tide, the latter as calm and blue as the Chesapeake when but a zephyr stirs its bosom . . . I have not seen the deep green of the ocean. No storm has yet swept over it. The winds are fast asleep. Aeolus has not opened the portals of his stormy cavern . . .

In Scotland he makes this entry:

> It would take days to trace the incidents as they rise up for review . . . The heart enters slowly into the poetry of such scenes and takes in the beauty as slowly. It grows into the scenes it contemplates . . . Just think of it. Wallace, the hero of Scotland, who defied the enemies of his native heath, and with his own single arm drove back her cruel invaders, incarcerated in a town near the sea-coast of Ayr; the poet Burns, who swept his harp to notes of freedom; Bruce the embodiment of chivalry . . .

The Highland Mary, the blossom that gave a lustre to the poet's brightest day-dream of love; the Doon, with its silvery wave flowing just as it did when Burns caught up the music of its song, all grouped together in the contemplation. But so it is in life. The past and the present meet—meet to mingle, and then part company.

In Florence besides seeing the marvellous beauties of that famous city, they spent a day in the studios of American artists:

> Powers [Hiram Powers (1805–73), noted American sculptor] was the first I called on. He received me most graciously. He is an old man young in heart and younger still in hope, in the fulness of an imagination that time has not in the least weakened. He is finishing and has now nearly completed a statue of Eve just after the fall, in the moment when she is waking up to a life-consciousness of the deadly sin she has committed. It is a marvellous conception . . . It is wonderful that the *chef-d'oeuvre* of this Ajax in the world of art should be the child of his old age . . . But in the case of Powers this law of our being seems to be reversed . . .

And this entry appears after their visit to Geneva:

> What a strange constellation of names meets us in this land of wonders! Voltaire, Calvin, Casaubon, Rousseau, Byron, Madame de Staël. There is a monument to Rousseau, and it is said that at Ferney the heart of Voltaire is deposited. The heart of Voltaire! *Miserable dictu!* . . .

At the close of October the brothers sailed for home. From Fenton's Hotel in London, on October 18th., Ninian wrote to his wife:

> We will leave for Southampton to-day, to be in readiness for the Leipsig which is to sail on the 23rd . . . In Paris I met with an old friend, Capt. McGlaughlin. His wife is with him. Mrs. McG. kindly offered to go with me and aid in the little purchases I had to make. She has superior taste and is familiar with the prices. I will not say what I have purchased, but one thing I will say that you and daughter cannot fail to be pleased. Little Pet will make a great sensation when she appears in her new French hat . . .

In October, 1870, Dr. Pinkney was ordered to the Navy Yard, Washington, and remained at that station until he retired in 1873. At the annual meeting of the American Medical Association in 1870, as Chairman of the delegation sent abroad in 1869, he submitted a report, which recommended the adoption of medical staff rank in the Navy. This recommendation was similar to that enacted into law a year later:

> Surgeon-General to rank with Commodore; Medical Directors to rank with Captains; Medical Inspectors to rank with Commanders; Surgeons to rank with Lieutenant-Commanders; Passed Assistant Surgeons to rank with Lieutenants; and Assistant Surgeons to rank with Masters.

As early as 1867 Dr. Pinkney had succeeded in winning Admiral Porter over to the idea of appropriate rank for the staff in the navy, and the Admiral himself made the proposal appearing in the following letter:

> U. S. Naval Academy, Annapolis, Md.,
> Dec. 31, 1867.
>
> My dear Pinkney:
>
> I write you now on a subject which you broached to me the other day, in relation to your Corps. My proposition is as follows, which line officers will agree to:
>
> 1. Surgeon-General with assimilated rank of Commodore and Brigadier-General.

2. Assistant Surgeons-General or Inspectors, with assimilated rank of Captain. From among these the Surgeon-General and Chief of Bureau will be selected.

[And so on down through the various ranks.]

The first of these grades will never be called upon to go to sea, but will be stationed at hospitals, be inspectors of the same, or chief of bureau.

Now, how do you like it? Write me plump and plain what you think of it. Don't dodge the question, and be hankering after anything more. Remember the fable of the dog and his shadow. Walk right square up to the captain's office and pay for your passage. Write at once and let me know how you like what I propose, and don't be noncommittal.

Your friend,
David D. Porter.

And the doctor must *have walked right up and paid for his passage*, if the indications in the following letter from the Admiral can be taken at their face value:

Washington, D. C., Jan. 16, 1871.
My dear doctor:

Please accept my thanks for your prompt congratulations in a matter which affects the whole navy in an equal degree with myself. Let us thank Providence that in the Senate of the United States there is a body of noble men who cannot be influenced by prejudice or misrepresentation. In the present instance their action is a proof that the case of every man who comes before them will be impartially considered.

Surgeon N. Pinkney, U. S. N.

Yours very truly,
D. D. Porter.

In August, 1871, Dr. Pinkney with his wife and daughter made a trip to Boston by sea, and thence to Portsmouth, New Hampshire. On the way they stopped off at the Norfolk Hospital, where they were cordially received by Dr. Duvall and his family and Dr. Pinkney looked over the hospital and grounds, and reminisced over his experiences in the same locality in 1858. At Portsmouth Dr. Pinkney renewed acquaintance with many persons whom he had met there twenty-one years previously, and also met some of his former shipmates and friends, among them Captain Pennock, the Fleet Captain in the *Black Hawk*, and Captain De Kraft. A letter to his sister headed "Crawford House, Smiles from Mt. Washington," indicates that they included a visit to the White Mountains in their itinerary.

The New England trip was primarily for pleasure, but during the residence in Washington, 1870-73, Dr. Pinkney often received calls to make addresses at distant points, at college commencements, before literary societies, political organizations, and similar bodies. In 1868, when he became a "copperhead" and sustained Seymour against Grant, he made several powerful and eloquent political speeches in neighboring cities. In 1870 he addressed the students of the Philokalian and Philomathian Societies at St. John's College; in 1876 he made the principal address at the commencement at Burlington College, taking as his theme the life and work of Washington, and contrasting his guidance of the ship of state with that of the leaders in power at the time he spoke, evidently to the disparagement of the latter.

In this year also, when the Hayes-Tilden contest occurred, Dr. Pinkney wrote his only poem, at least the only one of which we have knowledge. The following stanzas will give us an idea of its character:

Reform's the work my jolly boys,
  Reform for aye,
We will the glorious song prolong,
  Through earth and sky.
Great Tilden is our leader now,
  Then rally round
The banner which our chieftain bears,
  Tis hallowed ground.
He knows the constitution well,
  The danger sees,
He'll right the ship and set all sail,
  To catch the breese . . .

And so on for nineteen stanzas!

On April 24, 1872, the retiring Surgeon-General of the Navy, Medical Director J. M. Foltz, wrote to Dr. Pinkney:

> I have just read, very carefully, your interesting and valuable report on Army and Navy Medical rank. It is quite the best history of the struggle of the Medical Corps of the Army and Navy of Great Britain, to obtain that rank and position which is now awarded to them, and which we are endeavoring to obtain, that I ever met with. I doubt if any equally comprehensive statement of "Orders in Council," and British legislation on the subject, exists in England. I therefore very much regret that your report has not been published and thus made available to all who are interested in the subject.

This tribute of praise extended by Dr. Foltz to the report which Dr. Pinkney had submitted upon the subject of "rank," the fruit of his study and his research abroad in 1869, is of interest, for the value of that report was greatly belittled by a former surgeon-general, with whom, for reasons about to be stated, Pinkney was not on the best of terms.

It appears that in April, 1871, Dr. Pinkney had received from the Secretary of the Navy, an appointment as delegate to represent the medical department of the navy at the meeting of the American Medical Association in San Francisco on May 3, 1871, with additional duty to inspect some work in progress at the Naval Hospital, Mare Island, California.

These orders were issued without the knowledge, or at least without the concurrence of the Bureau of Medicine and Surgery, the Chief of which at this time was medical director William Maxwell Wood.[42] Thus there developed a situation with all the elements of a tripartite quarrel between Wood, Pinkney, and Robeson, the Secretary, as will be apparent from the correspondence given below.

After his return to Washington from San Franciso, Dr. Pinkney, on June 2nd, addressed the Secretary in these terms:

> Under date of April 12th I was appointed by you a delegate to represent the Medical Department of the Navy in the National Medical Convention at San Francisco. I presented the order of appointment to that body, but was not received and accredited as a delegate.
>
> The Chief of the Bureau of Medicine and Surgery addressed a communication to Medical Inspector Lansdale directing him to protest against my being received as a delegate, at the same time stating that he had already appointed four medical officers, and that the power of appointment was vested in him. That communication was placed in the hands of the President of the Convention. It now remains to be seen whether an appointment by the Honorable Secretary of the Navy can be suspended by an order from the Chief of the Bureau of Medicine and Surgery, whose sole official authority is derived from the former.

On June 9th, Surgeon-General Wood forwarded a communication to the Secretary, in which he set forth his side of the controversy, and incidentally embraced the opportunity to express an opinion of Dr. Pinkney's professional and service standing in terms which are strangely at variance with any other estimate of the doctor which we have seen:

> The report of Med. Dir. N. Pinkney to the Hon. Secretary of the Navy upon the Hospital at Mare Island, referred to this Bureau, is the first notice the Bureau had received that it had such an aid in the performance of its duties . . . There are works going on at Mare Island . . . inviting expenditures . . . to which the Bureau would have been glad to direct the attention of any aid in whom it had confidence, but the record of Med. Dir. Pinkney does not present him before the Bureau as a suitable person to be entrusted with so important and responsible a professional mission. This officer is known to the Medical Corps of the Navy and the medical profession of the United States more by his political than by his professional history, by persistent though abortive efforts to represent his native State in the U. S. Senate, and by his speeches before political meetings, asserting that the present President of the United States [Grant] has, "but little claim to intelligence," and questioning whether, "such a man is fit to preside in the present state of the nation's affairs." Med. Dir. Pinkney's political opinions are undoubtedly his own right, but his political labours are not such as to give him the best fitness for professional duties, and this fact his further record shows.
>
> Having been sent to Europe and given every opportunity for investigation upon important matters, the report of his observations was so inaccurate, so contrary to known and established facts, so turgid and obscure in style, that upon the report of a committee of the ablest men in the American Medical Association, representing 30,000 constituents, it was rejected as unworthy of publication.
>
> The present report is equally and characteristically worthless . . . it is painful for me to be compelled to comment in this manner upon a brother officer, but it is due to myself to show why the Bureau has found itself unable, consistent with the view of its obligations, to favor Med. Dir. Pinkney's aspirations to the various conspicuous positions he has so industriously sought *and obtained.*[43]

Surgeon-General Wood supplemented his official letter to Secretary Geo. M. Robeson, by the following personal letter:

> I can hardly express to you the reluctance with which I make the official communication relative to Med. Director Pinkney, but I trust you will read it so as to understand how humiliating and annoying my position is relative to that officer. I think you will see that my office is brought before the navy in such a manner as to destroy all respect for it, whatever may be that for the incumbent, and this will be presented as the purpose of the Department, whereas I feel every confidence that the proceeding is the result of accident and the kindly intention to gratify the wishes of an individual. Should my official communication add, in any way to your many vexations, I respectfully ask your permission to withdraw it.

Thus the challenge was made and the issue joined, but in spite of some pains to discover the real victor in this encounter, we have found little evidence that Dr. Pinkney's wings "were clipped" as a result of it. One inference is perhaps entirely justified, knowing the temper of the two medical men involved, viz., there was no compromise, although Dr. Pinkney in the end had the field to himself, for in October, 1871, Dr. Wood was retired while Dr. Pinkney remained on active service until June 7, 1873.

On May 24, 1873, the former chief of bureau, Dr. Foltz, wrote to Dr. Pinkney a letter from which the following extract is taken:

> You are now on the eve of your retiracy and leaving Washington. I hope yourself and Mrs. Pinkney will enjoy it as much as we do. We are now perfectly happy, "at peace with all the world and the rest of mankind." . . .
>
> Please give my regards to that "ace of trumps" Admiral Porter. I often think of the happy hours passed in your house, where I always got the best coffee in America. With my best respects to Mrs. and Miss Pinkney.

In the year of his retirement, Dr. Pinkney was awarded the honorary degree of Doctor of Laws from his alma mater, St. John's College, in whose behalf he had recently delivered two very able adresses.

The doctor faced the prospect of a life of retirement with manifest reluctance. He considered himself to be still quite equal to active work and in the full possession of all his powers. His feelings on this subject are very well set forth in some fragmentary notes found among his papers which evidently were intended for an address to be delivered at a meeting of the American Medical Association. The date and place of the meeting may only be gathered approximately from the context, but it was probably at Chicago in June, 1877:

> I have mingled with you on many occasions of intellectual feasting and festive rejoicings; and the recollection of the happy and instructive hours thus passed constitute an oasis in the now finished career of my once active naval duty. By the verdict of our legislators, and we must not dispute their title to be esteemed both wise and honorable; I repeat by the verdict of our legislators, you see before you an old man, too decrepit and infirm, too far advanced in the *facilis decensus* of professional life to be able to hope to render any further service in the scientific progress of the corps, at least so they deem.
>
> I feel to-day as though I had just commenced the most useful period of my life. Too old for naval duty it may be—but still the youngest man in your body, for I am but four years old in my new career, with hopes as fresh and ambition as buoyant, and energies as capable as ever. And herein is a marvellous thing. Too old for the navy, and a babe of four years old in the new life that is welling up within me, as fondly attached to the noble old fraternity of doctors as ever. I should grieve to think that N. S. Davis[44] had been retired at 62 years of age, and fancy the world would have been an immense looser if so disastrous an event had occurred. I should be not less grieved that 62 years of age had hushed the voice of our able professors in the several institutions of the land, or banished from the sick room the experience that 62 years must give. Retire those who are incompetent, and let not any age constitute incapacity, or ban out the truly capable. Be this as it may, no law can ever break the bond that binds me to you, or sever me from your annual gatherings. In looking back on the 28 years now past, I know that while they have notched themselves on the calendar of time, they have left me not one whit less capable of work, nor have they diminished in the least my interest in you or the achievements of your skill and bold adventure in the cause of surgery and medicine. . . .

In commenting upon this period of his brother's career, Bishop Pinkney said:

> He was never better fitted for the display of his rare knowledge and experience than at the time he was retired. It has been my regret that he did not

remove to New York for a field whereon to show the world, that the service not deemed needful to the Navy could reap its golden harvest in a thronging thoroughfare of business life, where the merchant is out on the exchange at seventy, and where the lawyer holds on to his clients at eighty.

But retirement was not by any means to spell inactivity for Dr. Pinkney. He had his home affairs and his farms about Londonderry to occupy much of his time; his interest in politics and in his own profession never waned, and he frequently employed his leisure in writing. Even on the very day he died one section of an article, entitled, "A Visit to the Hunterian Society [of London], appeared in a local paper. *The St. Michaels Comet and Advertiser*, issues of Dec. 15 and 22, 1877, copies of which, unfortunately, have not been located; and he still delivered eloquent and stirring addresses in the neighboring cities on various topics political and literary.

Two letters from his friend Cunningham have been found which attest his brilliancy in this latter direction:

1115 I Street,
Washington, Friday, 27, Nov. '74.

My dear Doctor:

I have taken pains to have your speech shown to President Grant by the hands of his brother-in-law, Dr. Sharp. I have also cut out the whole report of the Baltimore Sun and mailed it to the editor of the Army and Navy Journal, New York . . . The Sun's report of your brilliant affair has spread all over Washington . . .

God bless you,
John S. Cunningham.[45]

Navy Pay Office, San Francisco,
Xmas Night, 1875.

My dear old friend:

Mrs. C. joins me in sending you tonight, from the surf edge of the Pacific to your beautiful home near the Atlantic, our best wishes for your health, happiness and prosperity—and also that of your family. I wish you had our climate! We are warm and comfortable without fire! Flowers and fruits and new green grass, and full leaved trees are all around us! We have no snow, nor ice, nor frost!

I have read with great pleasure, your eloquent oration, and it has been borrowed for reading by others. I will return the MSS. in a week from this. I wish I could have it printed here. It is one of the most eloquent and beautiful things I have ever met . . . That admirable photograph of you by Rice . . . *adorns our mantel piece.* So we have you constantly "in sight," and you are never "out of mind," (old saying)

I have told the *bon vivants* here, in the Clubs, of your Nectarian *Punch* and unapproachable *Apple Toddy*—and your *Nut fed Turkeys*, and they say, "Allah! praised be Ninian, the inspired!" "We wish we had him with us."[46]

Always yours,
John S. Cunningham.

The reference, in this letter to a photograph of Dr. Pinkney is a reminder that we have given no adequate description of his person except such as may be derived from the portraits appearing as illustrations in this memoir, nor of his more personal characteristics.

Bishop Pinkney in his memoir says: "He was of slight physical frame from his infancy, but still capable of intense mental and physical activity with a stalwart will that never faltered, and the most wonderful powers of endurance."

Dr. Samuel Alexander Harrison said of him: "In person he was very small, almost diminutive. His face was agreeable and his brain large."

We have been able to communicate with one person who in his youth knew and who recalls Dr. Pinkney.

This gentleman states: "Dr. Pinkney was a most delightful man socially, one of the best story tellers I have ever met, and I well remember the delight he gave us youngsters when visiting his home 'Londonderry' near Easton, Md."[47]

Of his professional qualifications Bishop Pinkney said:

> Of his skill, plodding industry, and supreme devotion to the cause of suffering humanity, I can also speak, for the evidences of them passed constantly before me. His strong analytical mind, his habits of close and philosophical study, his keeness and quickness of perception and thorough knowledge of the curious mechanism of the human frame, together with what I would call—for lack of a better work—the manipulations of his profession, combined to make him what he was, one of the very foremost surgeons of the age.
>
> He was born to the profession. His force of will and self reliance were undoubted elements of his strength. For while he was forceful, he was not wilful. His self reliance was the result of deep study and large experience. He not only studied the science generally, but he often studied a particular case, and that for hours. If I were to undertake to analyze his mental structure, I would say that he combined in a very remarkable degree brilliancy and depth. In this he strongly resembled his great uncle, the late William Pinkney, of Maryland. His brilliancy was at all times under the control of a sound judgment while his depth was thorough. He had a remarkably retentive memory. Facts were ever at his command. His reading was extensive and minute. He read with pen in hand to question and refute the author, if in his judgment the position assumed was not tenable. It was his habit to lay by him for future use all documents that bore on the subject of investigation; and this made him an antagonist to be watched and dreaded. He reasoned out everything. He fathomed first principles and would never rest satisfied until he had seized hold of the thread to guide him through the labyrinth. He would have made a splendid lecturer on surgery, for he had the gift of oratory. His command of language was rich, while his magnetism of manner was well nigh irresistible. There was a contagion in his enthusiasm. He could infuse his own mind into others, and mould the minds of others into his. A live teacher he would have been, for he carried the text-books in his brain, and could cite them at will, page and section.
>
> Noble is the profession of surgery in the Navy, and wide is the scope therein afforded for usefulness and ambition. And yet I have thought that if Pinkney had not been confined to the professional routine, and had accepted a more independent sphere, such as the classroom affords, he would have risen to still greater distinction. It is no disparagement of the Navy and its most admirable corps of surgeons, who have their place in the front rank among the foremost, to say, that it did not supply a theatre for the exhibition of his peculiar gifts of speech, or rare mastery of the science of surgery.

Of the doctor's social qualities much has already been said, but in spite of a possible bias that a near relationship is apt to engender, let us see what his brother has to say of him in this connection:

> He was possessed of infinite humour and sparkling wit. His wit was without a sting. Keen as a Damascus blade, it was ever wielded by a gentle hand. His humour was indulged more at the expense of himself than others. I have known him, time and time again, to keep a whole company in a roar of laughter for an hour, without being himself in the least degree moved. It is not possible to define or describe wit. It is a thing to be felt. It lives in the tone, the look, the sparkle of the soul. But you cannot touch it. To be

> realized it must be felt. His power of sarcasm was extraordinary, and what is fully as remarkable, his sarcasm was like wit—without bitterness. It was fearfully playful.
>
> Brave—he was a man among men. An admiral of the Navy, writing to me, says: 'he was true as steel and as brave as his own sword.' That bravery was tested outside of the line of his own duty, in feats of valor in the war with Mexico, and for it he was rewarded by a vote of thanks by the legislature of his native state. But even his native state was not apprised of one act of his heroism which is entitled to the highest praise—as is known to no one so well as Rear Admiral Rodgers of the Naval School at Annapolis —so silent was he of his doings on the fields of Mexico.[48]

One of the last letters by Dr. Pinkney of which we have knowledge, dated October 15, 1877, was addressed to Dr. Joseph Meredith Toner of Washington, who was then engaged in compiling his medical biographies.

In order to complete his article on Pinkney, he had written to him, particularly with reference to the details of the operations performed in Peru, in 1841–43. In the sketch on Dr. Pinkney, Dr. Toner alludes to him as follows:

> Dr. Pinkney possessed a vigorous intellect and an active temperament, which, with an ardent love for his profession, enabled him to perform a large amount of professional work and literary labor outside the requirement of his official duties.[49]

As already outlined the last days of Dr. Pinkney's program of life were occupied by devotion to agricultural and literary pursuits at his beautiful home Londonderry near Easton Point, by his interest in political matters, local, state, and federal, in which he was always (in his later years) an earnest advocate of the democratic party and its principles, assisting to a great extent in the conduct and prosecution of every campaign, and finally in dispensing that lavish and liberal hospitality, to all who sought him out in the quiet and seclusion of his home, for which he was noted.

A week or ten days before his death he went to Baltimore, for what purpose is not known, and was moving about the city all day exposed to a driving incessant rain. He, of course, became very wet, and returned home on the steamer that night without any change of his clothing.

On the following morning he exposed himself again to the continued inclement weather "while superintending the killing of his pork," and thus contracted a severe cold, which, added to his eating imprudently of something which disagreed with him, brought on the illness which terminated his earthly existence five days later.

The cause of death is given in contemporary accounts as "inflammation of the stomach and bowels."[50] Bishop Pinkney, who was able to be with his brother for consolation in his last moments, and for the commendatory offices of the Church over his departing spirit, stated, in a letter to Judge Huntington: "His end was calm and peaceful. His disease I think was incurable; some obstruction in the stomach, so that nothing could pass into it." These references do not clearly indicate the exact nature of the disease causing death. He died at his home at 3. P. M. on Saturday, December 15, 1877, leaving a widow and one daughter to mourn his untimely end. In his last illness he was attended by Drs. Earle and Chamberlaine.

Many were the encomiums on his character and distinguished career appearing in the press, and in letters of condolence to his brother.

A few months later, in 1878, Bishop Pinkney wrote the memorial sketch on his late brother, which has been so freely drawn upon in writing this memoir. The Bishop's memoir was dedicated to Admiral David D. Porter, "as a slight token of regard. No one possessed equal opportunities of judging rightly of Dr. Pinkney's rare abilities and acquirements. No one shared more fully his warmest love and admiration. . . ."

The loss of his brother Ninian fell as a heavy blow on Bishop Pinkney. "The mutual attachment between these brothers was singularly tender and enduring. Each had for the other an almost unbounding admiration in the spheres they respectively filled. . . ."

A clergyman who had been Ninian's pastor[51] . . . thus wrote of him to the Bishop:

> I can speak from my own knowledge of his noble characteristics . . . I had a high estimate of his great and varied powers; of his vast erudition in medical science; of his extraordinary learning outside of his profession, even to a large compass of constitutional law and political philosophy; of his special gifts of oratory; and not least of those genial qualities which rendered him so delightful in the social circle, and made his presence so enjoyable to his friends, whether at his own hospitable mansion or elsewhere . . .

The Bishop, in the letter he was accustomed to write to Mr. W. W. Corcoran of Washington on the latter's birthday, touchingly alludes to the death of his brother:

> . . . A dark shadow has passed over me since I saw you last. In my brother's death I have sustained a loss I can never estimate. For twenty years we shared the same bed, and there was never a divided heart between us . . . I seem to have passed through a fearful dream. Three weeks ago and my brother was writing at this table in the room which I recently put up for him, and which is called by his name. He was then in the flush of health and full of earthly hopes . . .

Dr. Pinkney's old friends and shipmates, Captain Eagle and John S. Cunningham wrote sympathetic letters of condolence to Bishop Pinkney. Captain Eagle said:

> I have the honor to acknowledge . . . the memorial of your late brother . . . who was associated with me as long ago as 1834. At that time I noticed his talents in his profession and found pleasure in being associated with him later in 1843. My experience bears me out in endorsing fully your statements regarding his character and ability . . .

Cunningham wrote:

> I have read with melancholy pleasure your beautiful and affectionate tribute to your distinguished Brother Ninian—"pride of the homestead on the Severn shore." . . . His absence now, on my return from California, when I look for him and cannot find him, tells me how supremely delightful to me was his companionship, and how profoundly I appreciated and admired him. His departure affects me more than that of any other friend I can recall. In fact, Dr. Pinkney was a link in my life, which, falling out from the chain, weakens and distresses me. My sweet memory of him will linger in my heart, and there abide till day is lost in night. To double the metaphor, I will cherish him with a love

that shall never die till the sun grows cold, and the stars are old, and the Judgment Book unfold.

Doctor Pinkney would have been accepted as a great power in the Medical World if he could have been enticed from the pent-up Utica of the Navy, and been forced to present his wonderful skill in surgery, with his impressive eloquence, to the boundless Universe of his profession, which would have opened ranks to his triumphal march!

Dr. Samuel Alexander Harrison said of Ninian Pinkney:

> He was a man of superior mind and kindly disposition. He was charitable to the poor, and social in his habits. He was impulsive and often betrayed into indiscretions and improprieties, but he was always honorable . . .

In the *Baltimore American* for Dec. 17, 1877, appeared the following notice:

> He was widely known and highly respected for his high moral character and scientific attainments . . . He was the brother of Bishop Pinkney, the nephew of William Pinkney, the cousin of William Pinkney Whyte, and the brother-in-law of the Hon. Samuel Hambleton . . .

Another newspaper article said of him:

> While he was reserved in manner he was a genial companion and liberal in spirit, and those who knew him best admired him most. He was widely known and highly respected for his freedom of speech, bold spirit, and scientific attainments . . . At the beginning of hostilities he made a telling speech at one of the largest meetings ever held in St. Michaels, in support of the flag which had protected him in many climes . . . After the Rebellion was put down he took ground against the administration of General Grant and acted with the Democratic party . . . The doctor was a ready speaker . . .

In the final words of Bishop Pinkney's memoir:

> He had his faults. Who of us is without them? Too ambitious he was. Perhaps a little too excitable. Perhaps a little too sensitive. But his ambition was noble. His excitability was without malice to any. His sensitiveness never led him to inflict a needless wound on another . . . *Sic transit gloria.* So life is. To-day, brilliant and full of the exultancy of hope. To-morrow, hushed in silence, only as we view it in the golden glow of the life to come.

Dr. Pinkney's funeral rites took place at Christ Church, Easton, at half past three on Monday the seventeenth of December. The service was conducted by the Rt. Rev. Bishop H. C. Lay, assisted by the Rev. Dr. Wilson, and the Rev. Messrs. Stryker and Beaven. Between thirty and forty carriages were in the funeral procession, besides a large number walking, and many came from distant points. The bearers were Commodore Charles Lowndes, General E. L. F. Hardcastle, the Hon. R. C. Hollyday, Dr. I. L. Adkins and George R. Goldsborough and F. H. Johnston, Esqs. His remains were buried in Spring Hill Cemetery, Easton, but at a subsequent date they were removed to St. Ann's Cemetery, Annapolis, where they now rest beside those of his father, mother, sister, wife and daughter. His wife survived him until September 3, 1896. A plain white marble headstone marks the grave, bearing this inscription:

NINIAN PINKNEY
MEDICAL DIRECTOR, U. S. NAVY.
BORN JUNE 7, 1811
FELL ASLEEP, DEC. 15, 1877.
"In the communion of the Catholic Church,
in the confidence of a certain faith, in the
comfort of a reasonable religious and
holy hope."

"If we believe that Jesus died and rose again, even so them also which sleep in Jesus will God bring with him."
(Thess. iv, 14)

Imagination was thine own best gift.
That weird thing—synonym of genius;
While thine it was to sound the lowest depths
Of logic, highest realm of reason.
But there was something richer, grander far,
It was the scintillation of the heart,
The sympathy that feels for others woes
And gives a smile responsive to each joy;
No poor man ever crossed thy wicket gate
But met a welcome, to his soul as sweet
As is the dewdrop to the parchéd earth;
Bread to the hungry thou didst freely give;
A shelter when the storm winds swept along;
A word of soothing to the aching heart,
O this was thy philosophy of life!
[*Bishop Pinkney*]

I wish to record my gratitude for assistance rendered, in preparing this memoir, to Miss Helena L. Pinkney, who loaned papers, portraits, and other articles connected with Dr. Pinkney, and for help in many other directions. I am under obligations also to Capt. William Hemphill Bell, M. C., U. S. N., Prof. Clarence W. Stryker, Mr. L. H. Dielman, Mr. R. J. Duval, Mrs. Barbara Frick Davidson, Miss Nannie D. Barney, Miss Esmeralda Boyle, the Rev. Edward D. Johnson, the late Sir. James Fergusson, Sir D'Arcy Power and Mr. Oswald Tilghman, for various items of information courteously supplied by them, and to the late Pharmacist Mate V. J. Spaulding, U. S. N., for typing the manuscript.

REFERENCES

29. Henry Benjamin Whipple (1822–1901) First Episcopal Bishop of Minnesota, 1859.
30. Lewis Henry Steiner, M.D., (1827–92), a native of Frederick, but long identified with Baltimore and Washington, as lecturer on chemistry and physics, and as librarian of the Enoch Pratt Library, Baltimore. During the Civil War he was employed as sanitary inspector by the U. S. Sanitary Commission, and was chief inspector in the Army of the Potomac.
31. As a matter of fact the list of ordnance and ordnance stores transferred to the *Red Rover* when commissioned included a 32 pounder gun and ammunition, 12 muskets and bayonets (with ammunition), 5 revolvers, 10 boarding pikes, etc. which should have been sufficient to meet the doctor's requirements.
32. PORTER, D. D. Incidents and Anecdotes of the Civil War. N. Y. Appleton, 1885.
33. The italics are added.
34. Admiral Porter's own account of the Yazoo expedition appears in his "Incidents and Anecdotes of the Civil War," N. Y., Appleton, 1885.
35. In September, 1864, Admiral Porter was ordered to command the North Atlantic Fleet, and soon after achieved his success at Fort Fisher.
36. Passed Assistant Surgeon Michael Bradley, who was a member of the medical staff of the hospital ship *Red Rover* and destined to take over Dr. Pinkney's duties a little later.
37. Among the names of the professors who signed Dr. Pinkney's diploma in 1830 (at St. John's College) was that of "Joannes Decker, A.M. Prof. Gram."
38. Gustavus Vasa Fox (1821–83), naval officer and assistant secretary of the navy with Secretary Gideon Welles. He was credited with much of the efficiency of Secretary Welles' administration.
39. William Faxon, appointed chief clerk of the navy department by President Lincoln (1861–66), and was assistant secretary of the navy. 1866–69.
40. On the fall of Vicksburg, Porter was made a rear-admiral and received the thanks of Congress. In 1866, probably subsequent to the date of his letter, he was made a vice-admiral, and when

Farragut died in 1870 he received the rank of admiral.

41. Fortunately recovered, with other papers of value to this article, from a chest in a cellar in Annapolis, Maryland.

42. For an admirable biographical sketch of this officer by Lieut. Commander W. M. Kerr, Medical Corps, U. S. N., see the ANNALS OF MEDICAL HISTORY, 6:387, 1924.

43. The italics are ours.

44. Nathan Smith Davis (1817–1904), "Untiring, irrepressible, uncompromising, and incorruptible, Nathan Smith Davis occupied for half a century a shining place in the foremost rank of the medical profession of the United States. He was father of the American Medical Association." (Kelly. Am. Med. Biogs.)

45. John S. Cunningham, pay director, U. S. N., Inspector of Provisions and Clothing, Navy Yard, Washington, 1871–72; special duty, Europe, 1873–74; pay officer, San Francisco, 1875–78. He had the nickname in the Navy of "Ubiquitous Cunning" through the faculty of always being on the spot when anything interesting happened. The speech mentioned in this letter was an address of welcome by Dr. Pinkney, delivered on the occasion of the visit of the Fifth Regiment to Easton, to spend Thanksgiving Day. (*Balt. Sun*, Nov. 27, 1874.)

46. Early in his career in the navy, Dr. Pickney was familiarly known among his associates as "Aunt Susan," a sobriquet which, I am assured by Miss Esmeralda Boyle, who kindly supplies this information, was bestowed not derisively, but affectionately.

47. This statement (Sept. 5, 1924) is from Prof. Clarence W. Stryker of St. John's College, Annapolis, to whom I am much indebted for this and other information relating to the subject of this memoir.

48. No record of this incident has been found.

49. Vol. 12, pp. 144–153, of the Toner Collection, Library of Congress.

50. In one account of Dr. Pinkney's last days the cause of death is stated to have been similar to that which terminated the lives of Robert Burns and Edgar Allen Poe. (MS in the S. A. Harrison Coll. Biog. Annals, No. 11, p. 110. Maryland Hist. Soc.) But Bishop Pinkney's statement about his brothers final illness is in direct conflict with this view.

51. The pastor was probably the Rev. O. Hutton, who wrote the *Life of the Right Reverend William Pinkney*, D.D. LL.D. *Fifth Bishop of Maryland.* Washington: 1890.

[From Schenckius: Observationum Medicarum, Francofurti, 1609.]

EDITORIAL

INAUGURATION OF THE DEPARTMENT OF THE HISTORY OF MEDICINE OF THE JOHNS HOPKINS UNIVERSITY, AND THE OPENING OF THE WILLIAM H. WELCH MEDICAL LIBRARY

EXERCISES in connection with these two important events were held at Baltimore on October 17 and 18, 1929. The occasion marks a noteworthy date in the history of medicine in the United States and was celebrated with a dignity and éclat worthy of it. On the morning of the first day the William H. Welch Medical Library was formally opened with a dedication by President Joseph S. Ames, of Johns Hopkins, remarks by the architect, Mr. E. L. Tilton, and a short speech of acceptance by Mr. Blanchard Randall, on behalf of the Trustees of the University. Following these Dr. Harvey Cushing delivered a most notable address. In the afternoon a Conference on Medical Libraries and Bibliography was held.

On the 18th the Department of the History of Medicine was formally inaugurated by Professor Welch, followed by an address by Mr. Abraham Flexner, and another (in German) by Prof. Karl Sudhoff, Director-Emeritus of the Institute of the History of Medicine, University of Leipzig. In the afternoon a large audience gathered for a Conference on the History of Medicine, at the close of which the Harvey Tercentenary Film, illustrating Harvey's experiments, with legends from the text of his "De Motu Cordis," was shown.

The presence of Karl Sudhoff, the great German medical historian, added greatly to the success of the celebration. Professor Sudhoff during his all too short stay in the United States delivered addresses in Boston, Philadelphia and New York, as well as in Baltimore. It is needless to say that these were all most admirable, and models of clear historic presentation. In addition Sudhoff's delightful personality endeared him to all who had the pleasure of coming in personal contact with him. While in Baltimore he was the guest of Prof. John C. Hemmeter, and those who were privileged to meet him at Dr. Hemmeter's fireside will never forget his delightful tabletalk. The following biographic sketch was compiled for the occasion and we are glad to be able to offer it to our readers through the courtesy of the Committee in charge of the celebration.

Karl Sudhoff, Professor Emeritus of the History of Medicine and Director Emeritus of the Institute of the History of Medicine in the University of Leipzig, is universally recognized as the foremost medical historian alive today. He was born in Frankfurt-am-Main, November 26, 1853, an only son. His father, a pastor in the Reformed Church, was descended from a line of rather well-to-do farmers who flourished in Braunschweig. His mother came from the Rhineland.

His early education was obtained in a *Gymnasium* at Kreuznach whence he entered, in his eighteenth year, the *Hochschule* at Erlangen, in Bavaria. Here apparently began his medical studies which were carried on later at the universities of Tübingen and Berlin. He began the practice of medicine in 1878, at the age of twenty-five, in Hochdal, near Düsseldorf in the Rhineland.

Early in his student career Professor Sudhoff became attracted to the study of the history of medicine, and he soon developed a special interest which has not abated with the years and is reflected in his eleven volume work on Paracelsus which has just been published in Germany.

Perhaps the most remarkable thing about Sudhoff's career is the fact that he was able to carry on extended investigations in the history of medicine despite the fact that he was a busy practitioner in a small German community. From 1878, when he began the practice of medicine, to 1905, when he was called to Leipzig, Sudhoff was first of all a practitioner of medicine. That is how he gained his livelihood. And yet, busy as he must have been, he managed somehow to find time to devote to his historical researches. He accomplished this, as he tells us in an autobiographical sketch in a recent number of the *Archiv für die Geschichte der Medizin*, by beginning work at five or six in the morning. This seems to have been his regular program and he only allowed himself to deviate from it when he had been obliged to make professional calls during the night. He never attempted any serious scientific work at night, and to this he attributes his long life.

In spite of the increasing demands of private practice Sudhoff managed to retain his ahiding interest in the history of medicine and to interest others in it. He helped to found the German Society for the Study of the History of Medicine, and was its first president. When the rewards of practice had reached the point where he could afford to build his own house, he lost no time in having one constructed with a room in it designed especially for his own bookish needs. In his autobiography he describes this room with evident pleasure, dwelling on the fact that the room was big enough to permit him to leave his books and papers undisturbed if called away to visit a patient or see someone in the consulting room.

When the call to Leipzig came in 1905, he was fifty-two years of age. The chair of the History of Medicine had been founded at Leipzig only the year before, through the generosity of Doctor and Mrs. Puschmann, and Sudhoff was asked to become the first incumbent. He did not at once accept, and indeed had great difficulty in coming to a decision. The chief difficulty seems to have been his disinclination to sever the ties of active practice. In spite of his great love for the history of medicine Sudhoff still considered himself called to be a physician, and he could not at once embrace wholeheartedly the prospect of an academic career in which his own patients would play a very minor rôle or even none at all. It is evident, from what he says in the autobiographical sketch already mentioned, that the final decision to accept the call to Leipzig cost him some mental anguish, as well as the actual steps in carrying out the plan. But the opportunity to create an institute for the study of the history of medicine, something which did not exist elsewhere in the world, could not be withstood and we find him in 1905 accepting the call and moving to Leipzig to start his new enterprise.

In Leipzig he could now devote himself wholeheartedly to the study of the history of medicine and the Institute soon became a going concerned. Papers appeared in press and in 1907 Sudhoff found it necessary to start his own vehicle of publication, the *Archiv für die Geschichte der Medizin.* The gathering together of old manuscripts pertaining to medicine became one of the principle activities on the staff of the Institute, under the direction of Professor Sudhoff, and today the collection possessed by the Institute is unsurpassed.

The war naturally brought about an interruption to all this activity. Sudhoff was soon serving in uniform in a dual capacity, as a university teacher and as a physician in a military hospital. In spite of these activities he found time to pursue his historical investigations and actually published several papers during this period. With the clearing away of the war clouds Sudhoff could once more turn his entire attention to his work at the Institute, and get the *Archiv* on its feet again. Lack of funds had necessitated suspension of publication but with the financial aid of some of his American friends he was able to resume publication.

Professor Sudhoff's principal investigations have concerned themselves with the writings of Paracelsus. While he is interested in, and familiar with, many other fields of medical history, that of the Middle Ages, and the life and works of Paracelsus have interested him most. This interest has culminated in a collection of eleven volumes dealing with Paracelsus, beautifully printed, which have just come from the press. They represent the crystallization of the life work of a great scholar in the field of medical history.

The Welch Medical Library is an independent library in Johns Hopkins University designed to house the collection of medical books and memorabilia belonging to the School of Medicine, the School of Hygiene and Public Health and the Johns Hopkins Hospital. It will be a working library for the staffs of the University and the Hospital, and will provide quarters and facilities for the development of the Department of the History of Medicine. The building is not only very handsome but most adequately adapted for its purposes. It is capable of containing no less than 528,000 volumes, and there are 78 cubicles for the use of individual workers, besides the general reading rooms. The Welch Medical Library consists at present of 60,000 volumes, including several notable collections of a special character such as the Morison Dermatological Collection, the Howard A. Kelly Collection, the Hugh H. Young Urological Collection, the Henry J. Berkley Collection on Psychiatry, the William Osler Collection, the Ahlfield Teratological

Collections, and the Warrington Dispensary Collection. Colonel Fielding H. Garrison is acting as consultant and has done great work in formulating plans for the organization and further development of the Library. The Department of the History of Medicine of Johns Hopkins University is a unique institution in the United States and with the men in charge of it and the means and facilities at their disposal it is bound to exercise a tremendous effect on the cultural aspects of American medicine.

The chief factor in the successful inauguration of the Department of the History of Medicine has been the illustrious and beloved Welch. We are privileged by the committee in charge of the celebration to reproduce the following biographical sketch of Dr. William H. Welch.

Dr. William Henry Welch of the Johns Hopkins University may be justly styled the dean of American Medicine. Now, at the ripe age of seventy-nine, after many years devoted to other fields of medical science and education, he is embarking upon an adventure which in some respects is new to him, but in other respects is not so new. He is actually engaged in launching a new department, that of the History of Medicine, in the University to which he has already given such distinguished services for so many years, and this autumn witnessed the formal inauguration of that department.

The task of launching new educational enterprises is no novelty to Dr. Welch. His life has been a succession of inaugurations, beginning with the founding of the chair of Pathology in the Johns Hopkins University in 1884, the first university chair to be established in that subject in America, then passing successively through the launching of the Johns Hopkins University School of Medicine in 1893, the establishment of the Johns Hopkins University of School of Hygiene and Public Health in 1918, and now, in 1929, the inauguration of the Department of the History of Medicine. Surely a career which merits a close inspection of the personality behind it.

William Henry Welch was born in Norfold, Connecticut, April 8, 1850. He was the son of William and Ameline (Collin) Welch. He comes of a long line of medical men for his father, four of his father's brothers, a grandfather and a great grandfather were all physicians. He entered Yale College in 1866 and graduated with distinction in 1870, receiving the A.B. degree. After teaching school for one year at Norwich, New York, he entered upon the study of medicine at the age of twenty-one, matriculating at the College of Physicians and Surgeons, in New York City. His stay here was brief for he found it desirable to interrupt the regular course of studies and return to Yale for a year of study in chemistry in the Sheffield Scientific School and the Yale Medical School. Here he met T. Mitchell Prudden who became his life long friend and who, together with Welch, was later destined to exert great influence upon the development of the science of pathology in America.

Returning to the College of Physicians and Surgeons in New York in 1872, he soon manifested an intense interest in the subject of anatomy and served as a student prosector to the instructors in that subject. While a student he won a valuable prize, a Varick microscope, and the possession of this instrument may well have played an important part in directing the interest of the owner to the study of pathology, which was later to form the basis of his career.

In 1874 Welch obtained the post of interne in Bellevue Hospital and here he found, or perhaps created an opportunity to perform post-mortem examinations and thus extend his knowledge of disease. The internship over, the year 1875 found him sailing for Europe with the purpose of study abroad. He spent two years in foreign study, chiefly at the universities of Strassburg, Leipzig, Breslau, where in succession he came under the influence of Waldeyer, Hoppe-Seyler, von Recklinghausen, Heubner, Wagner, Ludwig, and the brilliant young Cohnheim, all names now famous in medical history. He had the good fortune, during these two wander years, to form many enduring friendships with fellow students in Germany, such as Ehrlich, whose names were later to be written large on the pages of achievements in medical science. During these two years his studies were chiefly along the lines of cellular pathology, a science then attracting great interest in Germany, and he had the great fortune to witness the demonstration, in Cohnheim's laboratory, of the experiments by Robert Koch himself, in which Koch showed that anthrax bacilli are the cause of the disease anthrax. This discovery of Koch's was the first conclusive proof that bacteria may cause disease and was of supreme importance to the human race.

After this period of study abroad we find him joining a "Quiz" group in New York, practicing medicine in a modest way and struggling to continue his studies in pathology in a small laboratory set up for him in the Bellevue Hospital Medical College. During the six years of this period he became the outstanding figure in pathology in New York City. He it was who introduced from Germany the new knowledge in this subject, and awakened great interest in it.

Meanwhile events destined later to be of great import to Welch were transpiring in Baltimore. The Johns Hopkins University was opened in 1876 and plans for the construction of the Hospital and the development of a medical school were under way. President Gilman made a trip abroad in search of a foreign scientist for the chair of Pathology in the proposed medical school. He was told in Germany that there was no need of seeking a man in Europe when there existed in America a man preeminently fitted for the task, Dr. Wm. H. Welch of New York City. As result Dr. Welch was called in 1884 to inaugurate the chair of pathology in the Johns Hopkins University, the first university chair in this subject in America, in the real sense of the word. He was made pathologist to the Johns Hopkins Hospital, which was not yet completed, and after a year abroad returned to Baltimore and at once began to conduct courses of instruction in pathology and bacteriology for physicians. Thus began the long tenure of the chair of Pathology in the Johns Hopkins University, which lasted until 1917, when Dr. Welch resigned to become the Director of the proposed School of Hygiene and Public Health. During the years he held the professorship of Pathology he contributed much to the advance of medical science, not alone through his own distinguished researches but also through the stimulus he was able to give to his associates and early pupils. Among these men are included many of the distinguished pathologists and internists of this country today.

Dr. Welch had a large share in the plans for early development of the Johns Hopkins Hospital and was chiefly instrumental in the selection of the other three original members of the staff, Osler, Halsted and Kelly. When, in 1893, sufficient funds were available for the opening of the medical school, Dr. Welch was the natural choice for the deanship, a post which he held until 1898. To him perhaps more than any to other man, is due the success of the institution.

In 1917 he resigned the chair of Pathology and undertook the task of establishing the School of Hygiene and Public Health, in which he had the great good fortune to be assisted by Dr. William H. Howell, a former dean of the Faculty of Medicine, having seen that enterprise successfully started and become a going concern, he turned to the latest enterprise in his career, the establishment of a new chair in the University, that of the History of Medicine.

It is well nigh impossible adequately to review the varied accomplishments of the man. He began his active career as a student of pathology, and has always remained a student of that subject. His earlier studies were concerned with the pathology of edema of the lungs, thrombosis and embolism, hog cholera and gas bacillus infection. One species of bacterium, discovered in his laboratory, has been named (by others) after him.

His activities, however, have not been devoted solely to the lecture room and the laboratory. As the years passed they took on an ever widening sphere and became those of an administrator a reformer in medical education and a wise counselor. In later years his energies have been directed along the lines of what has been aptly termed by one of his own pupils "medical statesmanship." Surely no man now living in America has exerted greater influence upon the course of medical education in this country, and hence indirectly upon the course of medical thought and practice. For this reason he deserves the title of medical statesman, and will always be thought of in such terms while men record the advance of medical science and medical education in America. He was President of the American Medical Association, 1910. He has been and still is a member of many boards, the names of which need not be detailed her. He finds time to serve as a member of the Board of Scientific Directors of the Rockefeller Institute in New York City and he has managed to devote time to the affairs of the Maryland State Board of Health of which he has been an active member for years. His services through this agency of the State of Maryland and City of Baltimore have been of inestimable value. His great personal charm together with his wisdom, his devotion to the civic interest, and his broad humanity, have made him a well-beloved figure in the city of his adoption and one whom his fellow citizens delight to honor. The Johns Hopkins University now honors itself, as well as Dr. Welch, in giving to the new library the name of "The William H. Welch Medical Library."

BOOK REVIEWS

The History of Biology, a Survey. By Erik Nordenskiöld. Trans. from Swedish by Leonard Bucknall Eyre. N. Y., Alfred A. Knopf, 1928.

This large volume is based on a series of lectures given by the Author at the University of Helsingfors in 1916–17. The subject is presented as a link in the general history of culture and it is this feature which gives the book its special significance and value. As the Author states, he has not attempted to present all the various results of specialized biological research nor to give even a resumé of the great achievements of many workers in more or less restricted fields. He has, we think most successfully, chosen for consideration the work of typical representatives in various lines of biology whose labors have influenced the trend of biological studies or the culture of their own and subsequent times.

The book is divided into three parts. Part I deals with such biology as was known in classical antiquity, the Middle Ages and the Renaissance. Part II is devoted to the biology of the seventeenth and eighteenth centuries, those important years when the use of the miscroscope, the development of chemistry, and the inception of systematic classification, laid the foundations on which the modern biology, which is splendidly described in Part III, were laid. All these sections are well balanced with one another and a striking feature of the book is the excellent judgment which the Author shows throughout as to the relative importance of the work of the many great biologists who have advanced the science from Aristotle down to the present day. He displays the closest familiarity with their writings and his intimate acquaintance with them enables him to clear up many current misconceptions as to what they did or did not say or do. The history of the cultural aspects and philosophic side of biology being the primary object of the book, the biographic is naturally not as much to the fore as in many of the special histories of science which are now appearing. Nevertheless the biographic material which is necessarily incorporated in the consideration of any individual's work is most charmingly presented and with ample sufficiency.

The translation is excellent and the book is adequately illustrated. It should be read as a most delightful contribution to the history of culture and natural science and it will serve as a valuable book of reference and guide for all those interested in the history of medicine. Until a few hundred years ago biology was quite universally regarded as the handmaid of medicine and most of the men who first pursued microscopic research were animated with the desire to add to the knowledge of human anatomy and physiology. Professor Nordenskiöld has given us a narrative which shows the continuity, with occasional breaks, of the trend of biologic thought from Aristotle to Darwin and his successors.

One of the longest and most interesting portions of the book is devoted to Darwin's work and to that of the biologists who espoused his ideas and those who combatted them. Among the first we find Huxley, Wallace, Herbert Spencer, Lyell, Joseph Hooker and Asa Gray. To their enthusiastic support most of the subsequent prevalence of Darwinism must be ascribed. Nordenskiöld quotes the statement of Rádl that "Darwinism was born in England but found a home in Germany," and to the powerful aid of many of the most prominent scientists of

Germany, such as Gegenbauer and Haeckel the great triumphs of Darwinism were largely due. In England Darwin's chief opponent was Richard Owen, who was ably seconded in the United States by Agassiz. Kölliker, Wiegand and von Baer were the chief German scientists to combat his views. Nordenskiöld gives a fair and comprehensive review of the entire subject. He himself is evidently not a great admirer of Darwin. In discussing the appropriateness of placing the body of Darwin in Westminster Abbey by the side of Newton he raises the question whether such an apotheosis was justifiable or not: "The question has been answered and can be answered either way. To raise the theory of selection, as has often been done, to the rank of a 'natural law' comparable with the law of gravity established by Newton, is, of course, quite irrational, as time has already shown; Darwin's theory of the origin of species was long ago abandoned. Other facts established by Darwin are all of second-rate value. But if we measure him by his influence on the general cultural development of humanity, then the proximity of his grave to Newton's is fully justified."

The chapters on Darwinism are most excellent examples of the Author's treatment of his material, giving great attention to matters which have had important bearing on the cultural history of the world even though he apparently does not consider that the verdict of posterity has sustained the high laudation which the scientist who contributed them received from his contemporaries and immediate successors.

FRANCIS R. PACKARD.

STRETCHERS, THE STORY OF A HOSPITAL UNIT ON THE WESTERN FRONT. By Frederick A. Pottle. Yale Univ. Press, 1929.

There seems at the present time to be a revival of interest in the life of the soldier during the Great War and many books have recently appeared dealing with the subject. In most of these the subject is treated in the most realistic manner and the more disgusting the details and sordid the narrative the better pleased seem the great majority of readers. Although the author of "Stretchers" was a member of a non-combatant unit in the United States Army he nevertheless had the opportunity of sharing in many of the ordinary hardships of the soldier's life, and no branch of the service saw more of the unheroic and wretched aspects of war than did the medical corps. Mr. Pottle begins his narrative with a relation of the various discomforts and minor hardships which fell to the lot of the enlisted men in the training camps in the United States. His Unit, Evacuation Hospital No. 8, arrived in France in May, 1918, and within a few weeks was in full service at Juilly caring for the wounded from Belleau Woods. It saw plenty of work during the fighting at St. Mihiel and the Argonne, and after the Armistice was sent with the Army of Occupation into Germany. The Unit returned to the United States in July, 1919.

This is an honest book. The Author narrates his tale in the plainest, most unrhetorical style, but with obvious adherence to the recital of only that which he saw. He was not a medical man, having enlisted, as so many educated men of his stamp did, in the Medical Corps because of the desire to get into the thick of things and be useful. His descriptions of the daily work in the hospital, of the stress and strain of caring for large convoys of wounded, of the courage and patience of the wounded, and of the many pathetic or humorous incidents which enlivened the service, are excellent. He evidently used his opportunities for the observation of very mixed human nature at close range, and his observations are well worth reading. Most of those who wish to read books on the Great War think that they will find the most interesting material in books which deal with life in the trenches, or with stories of the great battles. We can assure them that this book will give them a more accurate idea of the soldier's life, both when fighting or behind the lines, than most of the other war books which have recently appeared. Above all it is a modestly written narrative of actual facts. If the books of Barbusse and Remarque are regarded as pacifist propaganda because of the horrors they contain, this book may be classed with them. In some details its quiet recital of the sufferings of the wounded is even more poignant reading than the melodramatic horrors of "Le Feu." We do not regard such books as pacifist propaganda, rather they are epic tributes to the heroism of the men who gave their lives for the ideal of patriotism.

This book stands high as an excellent presentation of a little known phase of war. FRANCIS R. PACKARD.

L'ARTE DEI MEDICI E SPEZIALI NELLA STORIA, E NEL COMMERICO FIORENTINO DAL SECOLO XII AL XV. By Raffaele Ciasca. Florence, Leo S. Olschki, 1927.

This is a most important work on the history of medicine and pharmacy in Florence from the thirteenth to the sixteenth century. The wonderful development of the medical sciences, particularly in anatomy, during those years in Italy is familiar to all, but the underlying causes of this development and the social status and professional habits of the physicians of that time are not so well known, though the names of Taddeo d'Alderotto, Mundino, Bartolommeo di Varignano, Beniviene, and many more great Italians are foremost in the renaissance of medicine. Ciasca recounts the story of the great guild of the Por S. Maria, which during the thirteenth century included the mercers, saddlers, ironworkers, victuallers, apothecaries, painters and physicians, and also literally "the butchers, bakers and candlestickmakers," and he shows how such a union of apparently incongruous trades and professions arose because of the mutual dependence of its various members on one another for the substances in which they dealt or worked. Thus in the sub-group which included the painters we find the dealers in brushes, canvass, etc., and the apothecaries, from whom the artists bought their pigments. Also the miniaturists, wax-image makers, sculptors, woodcarvers, scribes, and illuminators. Saddles and other housefurnishings were works of art in those days and the ornamental leatherwork of Florence is famous to the present day, and accordingly the workers in these commodities go along with the armorers, and the swordmakers, daggermakers, and the artisans who made sheathes for such weapons, were associated with their artistic brethren. The mercers, who were originally the predominant element in the guild, included many geniune artists who employed their skill in the wonderful embroideries and weavings which won renown for their native city throughout all Europe, and also the cap and glovemakers and those who made belts and purses. The physicians and barbers would naturally be associated with one another and with the apothecaries, who were also dealers in spices and aromatics, and as stated above in the coloring materials used by the artists. In the beginning not one of these trades or professions was in a position to maintain itself as a separate guild and their union gave them a standing which they could not otherwise have hoped to obtain. As time went on they grew less mutually dependent and became differentiated. The Author describes the gradual evolution which eventuated in the separation of the different elements into companies or sodalities of workers in the same or more closely allied lines. By the end of the fourteenth century the physicians were organized in a "college" with a provost. Ciasca describes the organization of this body. It was governed by rules which show high ethical ideals. No physicians could treat a patient in another doctor's care without the consent of the latter.

In serious cases which baffled their own skill they were bidden to call a consultant and in cases with serious wounds to demand the assistance of a surgeon. They were to aid one another in the case of sickness or infirmity and extend comfort to the widows and orphans of their colleagues. Severe examinations were arranged for the applicants for the doctorate. He must have studied philosophy, grammar and rhetoric, besides his strictly medical studies. Many physicians were also distinguished philosophers. Petrus Hispanus, the author of the "Thesaurus Pauperum," later elected Pope, with the name John xxi, Albertus Magnus, and many others might be mentioned as writers on philosophy as well as medicine. The "Studio," or university, of Florence was founded in 1321, somewhat later than the similar institutions of Bologna, Padua and other Italian cities. Its growth was retarded by various obstacles, political crises, inundations, famine, and especially the plague of 1348, but its promoters never lost faith, and as soon as the last-mentioned misfortune was finished it took on new life. The development of the study of anatomy in the fourteenth century is adequately described. There is a valuable chapter on the remedies and preparations which were made and dispensed by the apothecaries and another chapter deals with the widespread commercial relations maintained by the apothecaries with the most distant quarters of the known world, particularly the Far East. Ciasca's book is splendidly documented and contains a wealth of details which can only be touched on in the limited space of a notice such as this. It is an indispensable storehouse for anyone interested in the history of medicine in Italy during the period which it covers.

FRANCIS R. PACKARD.

THE HISTORY AND TRADITIONS OF THE MOORFIELDS EYE HOSPITAL, ONE HUNDRED YEARS OF OPHTHALMIC DISCOVERY AND DEVELOPMENT. By E. Treacher Collins. Lond. H. K. Lewis & Co., 1929.

At the beginning of the nineteenth century it required considerable courage for any man of professional standing to announce in London that he intended to devote himself exclusively to the treatment of diseases of the eye. Exclusively ophthalmic practice had received a black eye because of the fact that throughout the eighteenth century its chief exponents had been a notorious succession of quacks, beginning with Sir William Read, and continuing with his successors the "Chevalier Taylor" and others. These charlatans seem to have basked in the sunshine of royal and aristocratic favor, and their success had been such as to bring unmerited disgrace on one of the most important branches of medical sciences.

Two reputable men, Wathen and Ware, were practicing ophthalmology in partnership in the early years of the last century, when John Cunningham Saunders, a favorite pupil and assistant of Sir Astley Cooper, undertook on the latter's suggestion to establish the first hospital for diseases of the eye in London. Fearful of the opinion of his professional brethren, Saunders first procured an endorsement of his plan from the physicians and surgeons to St. Thomas's and Guy's Hospitals. He then secured the interest of a number of wealthy citizens in the project and in 1805 opened "The London Dispensary for Curing Diseases of the Eye and Ear."

After Saunders had issued the proposal of his plan but before he had put it in operation, Wathen (afterwards Sir Wathen Walter), who as already mentioned was engaged in ophthalmic practice, had interested King George III in the condition of the great number of soldiers who had returned from the Egyptian campaign suffering from ophthalmia and had secured the patronage of the Royal Family in the establishment of a hospital for treatment. This institution "The Royal Infirmary for Diseases of the Eye" was opened shortly before the London Dispensary, but Saunder's project was under way before the other was started.

In 1807, at the suggestion of Saunders, the Governors resolved "That diseases of the Eye shall in future be the sole object of the Charity, and that its name be changed to that of The London Infirmary for Curing Diseases of the Eye." The name was changed again in 1821, when the Infirmary moved into its home in Moorfields, to "The London Ophthalmic Infirmary," and in 1836 it was once more altered into "The Royal London Ophthalmic Hospital, Moorfields." In 1899 the institution moved into its present home in the City Road. From its foundation to the present day Moorfields has had on its staff many of the most eminent ophthalmologists of Great Britain as well as men eminent in other lines. In support of this statement we need only mention after Saunders the names of Benjamin Travers, Sir William Lawrence, Frederic Tyrrell, Sir William Bowman, and Jonathan Hutchinson, all of whom did much of their best work in its walls. Within a few years after its foundation it became known as a great ophthalmogical teaching center and its fame as such as been maintained. Its work early led to the foundation of similar institutions in other lands. Two young Americans, Edward Delafield and J. Kearny Rodgers, after studying at Moorfields, were so fired with enthusiasm that on their return to New York in 1818 they founded the New York Eye and Ear Infirmary, and Edward Reynolds, of Boston, after completing his studies at Moorfields returned to Boston and in 1824 established the Massachusetts Charitable Eye and Ear Infirmary. In 1819 the East Indian Company, advised by Travers, stated the Madras Eye Infirmary under the charge of one of his pupils. The distinguished author was himself for many years one of the leading spirits at Moorfields and no one was better qualified nor has more delightfully performed the task of compiling its most interesting history.

Devils, Drugs, and Doctors, the Story of the Science of Healing from Medicine-Man to Doctor. By Howard W. Haggard, M.D. Lond., Wm. Heinemann, 1929.

This is a most original and interesting story of the development of the science of medicine from the welter of superstition and empiricism out of which it has emerged. The Author deals more with the sociological aspects of medicine than with the strictly historical or personal aspects of the subject, and makes no attempt at a complete history of medicine.

Part I, "The Conquest of Death at Birth," deals with the story of the development of the care of the parturient women from the earliest times to the present day. In it the Author shows that during the ascendancy of Greek medicine obstetrics was on a much higher plane than it was later during the Dark and Medieval Ages, and how this descent was largely the result of religious fanaticism. Four things were epoch-making in the elevation of obstetrics to its present position; the introduction by Ambroise Paré of podalic version, the invention by the Chamberlens of the obstetric forceps, the revelation by Semmelweiss and Oliver Wendell Holmes of the true nature and cause of puerperal fever, and the introduction of anesthesia into obstetric practice. This is one of the most important and best written sections of the book. Part II recites "The Story of Anaesthesia," covering the subject very thoroughly and impartially. Part III, "The Progress of Surgery," deals with the important factors without which it could never have reached its present development. These were a proper knowledge of human anatomy, due to Vesalius (1543) and Harvey (1628); the re-introduction of the ligature, by Paré (1537), which rendered possible the control of hemorrhage; the discovery of ether anesthesia, Long and Morton, in the eighteen-forties; and finally the labors of Pasteur and Lister which rendered possible modern antisepsis and asepsis.

Part IV, "The Passing of Plague and Pestilence," is a most vivid and interesting description of the terrible epidemics of ancient times and the means by which modern science has succeeded in either eliminating their causes or greatly mitigating their effects. The section in this Part which deals with venereal disease is especially good and it is to be hoped that it will be widely read by the laity. It is a clean, frank discussion of all the facets of the intricate problems of prostitution, prophylaxis, publicity, showing that the Author has studied the subject thoroughly and is well equipped to present the hard facts without prejudice.

Part V, "The Healing Art," deals with methods of cure from the magic of the medicine man to the latest fads of Christian Science and physiotherapy, closing with a summary of some of the new scientific methods of therapeusis and prophylaxis, which have conquered such diverse diseases as smallpox, syphilis, diphtheria, malaria and yellow fever.

Part VI is a brief review of "Medicine Throughout the Ages," summing up many of the facts dealt with in detail in the preceding pages. The text is accompanied by a large number of particularly well-chosen and well-reproduced illustrations. It would be well if physicians would recommend this book to laymen, especially such of the latter as may be on hospital boards or connected in other ways with medical matters, because its excellent presentation of many of the most important aspects of medical science with which such laymen come in contact cannot be over-emphasized. We think it would add greatly to its value if the Author would add a brief bibliography or reader's guide to the various sections, not so much to confirm his statements as to stimulate his reader to further study of the subject.

There are some rather provoking errors to be found, indicative of careless proofreading. Thus the date of the Massacre of St. Bartholomew is given as 1571 instead of 1572, and Harvey's establishment of the circulation of the blood is stated to have occurred in 1624. The name of Handel is transferred into Handle (p. 54), Bayle becomes Bayles (p. 62), and Syme becomes Symme (p. 169). William Shippen, Jr., graduated from the University of Edinburgh, not Glasgow, as stated on p. 71, and Servetus was burned because he denied the divinity of Christ and not, as stated on p. 147, because he described the pulmonary circulation.

It may seem invidious to direct attention to faults of this character in otherwise so excellent a book. We only hope that the demand for it will be such as to require a second edition in which they may be corrected.

FRANCIS R. PACKARD.

KYKLOS, JAHRBUCH DES INSTITUTS FÜR GESCHICHTE DER MEDIZIN AN DER UNIVERSITÄT LEIPZIG. Band II kart. Leipzig, Georg Thieme, 1929.

The second volume of Kyklos (the first was reviewed in these ANNALS in January, 1929) is dedicated to William H. Welch and to the Institute of the History of Medicine of Johns Hopkins University. This is a gracious compliment to a great American scholar and a fine international gesture worthy both of the Historical Institute in Leipzig and its youngest daughter in America. The volume contains a number of highly philosophical articles that do not readily lend themselves to condensation. Sigerist discusses the position of the patient in society in its historical development. As long as disease was considered a punishment, a certain odium rested upon the sick. He was a marked individual, one to be shunned. Early Christianity looked upon sickness as a grace and thus gave to the patient a position of preference that has lasted more or less until our day. It was an obligation, a Christian duty, to care for the sick, as shown in St. Bernard's well-known command: "Infirmorum cura ante omnia adhibendum est." The growth of the modern state has introduced a new note in the position of the sick. While formerly health and disease were a matter of purely private concern, it is now considered everyone's duty to be well. Whoever knowingly spreads a contagious disease, who when ill does not do everything in his power to regain health, is an offender against society, an unsocial being.

Owsei Temkin, in a lengthy and rather involved article, considers the "*Sinn*"-*Begriff* in medicine. He presents in review the changes that the concept of the anamnesis, of the history of the disease in the patient, has undergone.

An erudite essay on the importance of Albertus Magnus in the development of the doctrine of the constitution in biology and medicine by Claudius Franz Mayer brings the great Dominican much nearer to us in thought than would be considered possible by those who know him only as a scholastic theologian.

An interesting article in English by Stephen d'Irsay entitled "A Physiological Synthesis" discusses the relative value of the data of observation and those of the experimental method, and the relation of cause and effect and the difficulties inherent in determining the proper relation. Causal thinking can detect only spatial and temporal sequences, nothing more. Touching upon the nature of life he declares himself unprepared to decide whether life belongs to a different order than the inorganic world; it might, it might not. And until definite proof is forthcoming that organisms differ from other systems not only in their large anatomy but also in something else that we cannot imagine today, until then vitalism in d'Irsay's opinion is not justified.

An article on Virchow is written in such an involved style that one must read and reread sentence after sentence to understand the author's meaning. Why does erudition in Germans so often go hand in hand with obscure diction? If an Englishman or an American is obscure, it is usually because he does not know his subject, not because of defective style. A Frenchman, whether he knows what he is talking about or not, is always crystal clear, it is the genius of his language. During the International Physiological Congress in Boston in August the reviewer heard many Germans take part in discussions. They spoke clearly, unhaltingly and to the point, showing that the spoken language at least is not inferior to any other. But when it comes to written medicine, things somehow are different. It would certainly help the spread of German science—profound, scholarly, indispensible—if those who write would think of those who read.

The volume contains a few pleasant studies on the history of drugs, such as convallaria majalis, scilla, etc. A bibliography of the writings of Karl Sudhoff on medicohistorical subjects during the years 1923 to 1928 included in the volume covers the prodigious number of twelve pages.

DAVID RIESMAN.

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WILLIAM STOKES
[1804-1878]